



BUSINESS TECHNOLOGY LEADERSHIP

POSTMODERN I.T.

8 steps for reinventing
your department to
drive innovation

Page 50

B2B E-COMMERCE

The smart way to move
from EDI to Web-based
transactions

Page 68

STRATEGIC I.T.

Inside ESPN's
digital revolution

Page 60

The Enterprise Gets

GOOGLED

Can a viral marketing strategy
transform the search engine
into a Microsoft for the Web?
It's already happening. Page 40

BY BEN WORTHEN



DAVE GIROUARD,
general manager,
Google enterprise division,
is hoping to bring Google to
an enterprise near you.

A man with dark hair, wearing a light-colored button-down shirt and dark trousers, stands in a dark, wooded area. He is looking towards the camera. The background is filled with dark trees and foliage, creating a moody and mysterious atmosphere. The lighting is low, highlighting the man's shirt and the texture of the surrounding environment.

THE WORLD ACCORDING TO
ANTHONY

I've decided to change the rules. From now on, threats will be afraid of me. **Dynamic Networking from AT&T** analyzes real-time traffic over the AT&T network to predict security threats before they become security breaches. With firewalls and intrusion protection, the AT&T network provides Anthony with a front line of defense and the confidence to take his network wherever he needs. With real-time reporting of security issues, potential threats are on Anthony's radar, but not on his network.

The new



at&t

Your world. Delivered.



Sun Microsystems has countless printers,
but only one output management services provider. Xerox.
By trusting our expertise they're free to focus on theirs.
There's a new way to look at it.

XEROX®

xerox.com/learn 1-800-ASK-XEROX ext. LEARN

Technology | Document Management | Consulting Services

Contents

MAY 1, 2006 | VOL/19 | NO/14

IT Organization

THE POSTMODERN MANIFESTO | 50

The service-fulfillment model for IT is dying. A new philosophy of innovation and productivity is being born. Here's what CIOs need to do to usher in a new age of IT.

By Christopher Koch



ESPN's Executive VP of Technology **Chuck Pagano**: "I'm pushing everyone toward the same strategic mission."

Strategic Leadership

GAME ON | 60

As ESPN fast breaks into the digital age, Technology Executive VP Chuck Pagano is calling the plays. To inspire his team, Pagano relies on communication, collaboration and a one-on-one leadership style.

By Thomas Wailgum

MID-MARKET: THE EVOLVING ENTERPRISE

HOW TO KEEP THE WEB FROM
BECOMING A TRAP | 68

Smart companies are taking their transition from EDI to the Internet slowly—to keep IT costs down and let suppliers' and customers' investments in technology catch up.

By Meredith Levinson

more »

40

Dave Girouard, general manager, Google enterprise division, says the Web applications your employees are using at home are raising their expectations for the applications they use at work.

Enterprise IT

COVER STORY | THE ENTERPRISE
GETS GOOGLED | 40

Can you imagine an IT environment without applications to roll out? You're going to have to if Google's plan to conquer the enterprise works.

By Ben Worthen

contents (cont.)



Columns

IT Architecture

SOA'S TRUE CHALLENGE—IT AIN'T TECHNOLOGY | 25

To gain the business-IT alignment promised by service-oriented architecture, CIOs have to focus on process and architecture—not just technology. **Essential Technology** by Galen Gruman

Leadership

THE WORST JOB IN I.T. | 30

Change is unstoppable, and CIOs are climbing aboard. Nice for them. But they risk losing their staff unless they communicate better.

Executive Coach by Susan Cramm

Business Strategy

HOW TO FIND YOUR COMPETITIVE ADVANTAGE | 34

If a product or process allows you to differentiate from your competitors, it's "core." For Domino's Pizza, delivery is core.

Applied Insight by Geoffrey Moore

CIO Role

A BENCHMARK FOR THE STRATEGIC CIO | 78

The CIO Executive Council has developed a benchmark to define and measure the performance of the CIO role's strategic aspects.

Forum by Richard Pastore and Michael Swenson

DEPARTMENTS

From the Editor | 6

Don't Leave Your People Behind | As CIOs reinvent themselves and their IT departments to drive innovation, they must avoid alienating the people they depend on to make it all happen.

By David Rosenbaum

From the Publisher | 8

E-Mail Addiction | The first step is to admit you're powerless. *By Gary Beach*

Trendlines | 13

Outsourcing | San Diego Tries to Learn from Contract Mistakes

Wireless Telephony | What to Do with All Those Business Cards

Online Media | A Fight About Rights to Copy

Privacy | Good Spying Versus Bad Spying

RFID | In China, More Chips Are in the Cards

Management Report | Big Company IT on a Mid-Market Budget

Research | A Super-Fast Computer Gets Faster

On the Move | New Flight Plan for Airline CIOs

Metrics | Measuring the Impact of Software on Profits

Customer Service | The Phone Is Still Better Than E-Mail

Index | 82

Endlines | 84

Out of Sight, Out of Control | What Your Remote Workers Are Really Doing *By Thomas Wailgum*

Wh@t's Hot Online

WHO OWNS THE INTERNET?

We have a map that shows you. Specifically, it shows just about every router on the North American backbone (there are 134,855 of them). If you're concerned about Net neutrality, check it out. It appears on CIO Senior Writer Ben Worthen's blog, Net Effect. To find the map, go to blogs.cio.com/neteffect and look for "Who owns the Internet?"





With Sybase® software, Hyundai Department Stores created a point-of-sale solution that eliminates cash registers and:

- ☒ Processes credit-card transactions from anywhere in the store
- ☒ Reduces total point-of-sale hardware costs by 40%
- ☒ Greatly improves sales tracking across the 13-store network

Want to see the future of retail? Where customers receive personalized shopping experiences. And in return, show their loyalty through more return visits and higher purchase totals. It's happening now at Hyundai Department Stores in South Korea. Thanks to Sybase Adaptive Server® Anywhere and SQL Anywhere® software, this 13-store chain has an information edge that enables salespeople to better assist customers, check inventories and capture signatures on the spot. It's changed the way customers view Hyundai. And it's causing many companies to view Sybase software as something they can't live without. www.sybase.com/infoedge3



Don't Leave Your People Behind

As CIOs reinvent themselves and their IT departments to drive innovation, they must avoid alienating the people they depend on to make it all happen

Ever since the first CIOs ditched their pocket protectors and shrugged into their executive suits, they've yearned for parity with the enterprise's other business executives. Now, as the business asks CIOs to come up with new ways to make money and not just save it, that day has finally dawned.

Exciting times. As Executive Editor Christopher Koch writes in "The Postmodern Manifesto" (Page 50), "CIOs will need to transform themselves into innovation leaders, not merely infrastructure stewards, and they will have to remake their departments in that image."

This is heady, absorbing stuff—innovating, remaking departments, rearchitecting the enterprise, reinventing the CIO role—but in all the excitement, CIOs need to remember that these changes may not be all that much fun for their IT staff. As New

York Life CIO Judith Campbell told Koch, "Moving to the innovation group isn't a natural career path for many [IT] people. They tend to like technology more than they like processes." But focusing on business processes, on improving, enhancing and streamlining them, is becoming IT's number-one job. As Dow Chemical CIO David Kepler says, IT has to "be allied with the company first and technology second."

What happens to the people who find the part of their jobs that they like best—programming, for example—outsourced in order to free them up to do process, or tacit work (the new buzzword)? The CIO knows this change is good for IT and good for the business, but the truth is, it may not be good for the individual.

Change is hard. People get hurt. And then they leave. As Koch writes, "CIOs will need all the leadership skills they can muster to manage this shift without driving their most experienced people away."

What a leader needs to be able to do in this environment is to help his people understand where all this change is leading and, most importantly, how they fit in. In doing so, as Executive Coach columnist Susan Cramm suggests in "The Worst Job in IT" (Page 30), a CIO "can add meaning and context to [his employee's daily] work."

Without doing that, without providing his or her employees with that meaning and context, a CIO may discover that when he yells, "Charge!" and begins dashing up Transformation Hill, no one will be following him.

This is heady, absorbing stuff—innovating, remaking departments, reinventing the CIO role—but in all the excitement, CIOs need to remember that these changes may not be all that much fun for their IT staff.

David Rosenbaum, Managing Editor
drosenbaum@cio.com

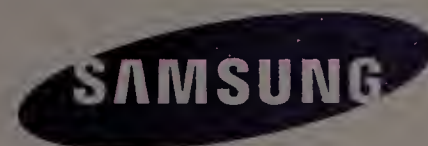


Convergence, meet the new guy.

Finally, the world has a truly converged work environment. The OfficeServ™ 7200 platform from Samsung's Business Communication Systems integrates voice, data, VoIP, analog, digital and LAN and delivers them all via wireline and wireless technologies. With wireless in the mix, employees can remain connected, efficient and productive throughout your business. Even when they're away from their desks. Now that's convergence. Complete convergence.

All hail the new guy.

For more information visit www.samsungbcs.com/OS7200



E-Mail Addiction

The first step is to admit you're powerless



I recently read an article in a business magazine about three busy executives. The writer of the piece asked them how many e-mails they typically receive in a day. They said they average about 150.

One hundred and fifty?! How does that qualify as busy? By lunch, I've usually received well over 200 e-mails. I've been averaging about 450. Some people I know get more.

Recently, I had an e-mail epiphany. It was triggered when I missed two calls from my boss. And, consequently, a meeting. How did I miss them? It was the 11th e-mail syndrome.

With my BlackBerry font set to eight, my screen displays 10 e-mails. But the e-mail from my boss was—thanks to Murphy's Law—11th in the queue. Out of sight, out of mind.

All this made me reflect on my e-mail management strategy.

I didn't have one.

I wasn't managing e-mail. E-mail was managing me.

My inbox is cluttered with useless e-mail newsletters that I have subscribed to over the years but have never read. Then there are the strings that have nothing to do with me. I spend an average of 30 seconds on each piece of mail, or nearly four hours a day. That's half of an average work day.

Something had to be done.

So I did it.

I found the "unsubscribe" button on the majority of those newsletters and, like the "easy" button on those Staples commercials, I pushed it.

I still get more e-mails than those "busy" execs, but now I am down to about 200 incoming.

If I could just train myself to use the phone more, or start writing notes by hand, I know the quality of my life would improve.

Write me a *handwritten* note if you have some thoughts on how to break the e-mail addiction: Gary Beach, CIO Magazine, 492 Old Connecticut Path, Framingham, MA 01701.

I look forward to writing back to my new pen pals.

Gary J. Beach

Gary Beach, Publisher
gbeach@cio.com



BUSINESS TECHNOLOGY LEADERSHIP

PRESIDENT AND CEO Michael Friedenberg
PUBLISHER Gary J. Beach

CXO MEDIA

CIRCULATION

SVP, CIRCULATION Carol A. Spach
SUBSCRIPTION SVCS. SUPERVISOR Tina Pescara

CIO EXECUTIVE COUNCIL

GENERAL MANAGER Mark Hall
MANAGING DIR., CONTENT DEVELOPMENT Richard Pastore
PROGRAM DIRECTOR Shaw Lively
DIR., EXTERNAL RELATIONS Karen Fogerty
DIRECTOR OF RESEARCH Michael Swenson
MARKETING COMMUNICATIONS MANAGER Jennifer Baker
MGR. OF OPERATIONS AND PROJECT MGMT. Jean Costello
DIR., EVENT STRATEGY AND PLANNING Thomas Bliss
VP, DEVELOPMENT Dexter Siglin
DIRECTOR OF RELATIONSHIP MANAGEMENT Steve Rovniak
PROGRAM SERVICES MANAGERS Michael Fahlsing, Ellen Friedman, Bill Golden, Carrie Mathews, Bill Roche
DEVELOPMENT MANAGERS
Ross Chapin, Patrick Clarke, Lauren DeLong, Robert Graham, Andy Kerr, Amanda Neal
OPERATIONS COORDINATOR Darcy Chamberlain

EXECUTIVE PROGRAMS

VP, EXECUTIVE PROGRAMS Ellen Daly
VP, CONFERENCE MGMT. Cynthia Mollus
DIRECTOR OF MARKETING Mary Cardwell
DIRS., BUSINESS DEVELOPMENT
Chris Mattoon, John Vulopas
DIR., EVENT PLANNING Amy Turell
CONFERENCE MANAGER Judith Kittredge
EVENT PLANNER Sarah Yee
DESIGNER Andrea Slobogan
CLIENT RELATIONS ASSOCIATE Lisa Byron
CLIENT SERVICES SPECIALIST Cress O'Brien

ONLINE

GENERAL MANAGER Rob O'Regan
DIRECTOR OF ONLINE TECHNOLOGY Christopher Murray
MANAGER OF ONLINE PRODUCTION SERVICES Todd Borglund
AUDIENCE DEVELOPMENT MANAGER Judah Phillips
ONLINE PRODUCERS
Bill Hall, Jennifer McCarthy, Joe Nguyen
ONLINE ADVERTISING SPECIALIST Irina Gabechii

INFORMATION SYSTEMS

IDG DIR. OF INFORMATION SERVICES Nancy Newkirk
INFRASTRUCTURE MANAGER James C. Burgoyne
LEAD DEVELOPER Sean McCracken
SENIOR USER SUPPORT SPECIALIST Christopher A. Kay
USER SERVICES SPECIALIST Gloria Lam
WEB DEVELOPER Sanghee Seo

PRODUCTION

VP, MANUFACTURING Chris Cuoco
PRODUCTION MANAGER Heidi Broadley
ASSOCIATE PRODUCTION MANAGER Lisa M. Stevenson

MARKETING

SR. DIRECTOR, MARKETING CDM. Sue Yanovitch
SR. MARKETING CDM. SPECIALIST Susan Maloney
MARKETING CDM. SPECIALIST Lynn Holmlund

RESEARCH

RESEARCH DIRECTOR Lorraine Cosgrove Ware
RESEARCH MANAGER Carolyn Johnson

ADMINISTRATION

CDD Matt Smith
DIR., FINANCE Margarita Chiango
FINANCIAL ANALYST, ONLINE AND INTEGRATED PRODUCTS
Chris Bernardi
EXECUTIVE ASSISTANT TO THE PRESIDENT Diane Martin
BILLING SPECIALIST Joyce Gillis
FACILITIES SPECIALIST John Kelley
OFFICE SERVICES COORDINATOR Mary E. Wooldridge

HUMAN RESOURCES

VP, HUMAN RESOURCES Patricia Chisholm
SR. HR REPRESENTATIVE Beth S. Ramistella



CXO MEDIA INC.

INTERNATIONAL DATA GROUP

BOARD CHAIRMAN Patrick J. McGovern
PRESIDENT, IDG COMMUNICATIONS Bob Carrigan



Has your industry changed
since you started reading this?
What do you do?



Manpower offers skills training and job placement for permanent and temporary positions in IT, engineering and other quickly evolving fields. Get up to speed. Call 866-531-0797 or visit www.us.manpower.com/change.



Manpower
Professional



BUSINESS TECHNOLOGY LEADERSHIP

PRESIDENT AND CEO Michael Friedenberg
PUBLISHER Gary J. Beach

EDITORIAL

EDITOR IN CHIEF Abbie Lundberg
MANAGING EDITOR David Rosenbaum

MANAGING EDITOR, PRODUCTION
Cheryl R. Asselin

EXECUTIVE EDITORS

Alison Bass, Christopher Koch

WASHINGTON BUREAU CHIEF

Allan Holmes

TECHNOLOGY EDITOR

Christopher Lindquist

SENIOR EDITORS

Stephanie Gelston, Stephanie Overby,
Elana Varon

SENIOR WRITERS

Meridith Levinson, Susannah Patton,
Thomas Wailgum, Ben Worthen

CONTRIBUTORS

Susan Cramm, Galen Gruman, Sumner Lemon,
Geoffrey Moore, Fred O'Connor, Shelley Solheim

EDITORIAL ADMINISTRATOR

Jill Paquette

DESIGN

EXECUTIVE DIRECTOR, ART AND DESIGN
Mary Lester

ART DIRECTOR Terri Haas

ASSOCIATE ART DIRECTORS

Matthew Goebel, Chandra Tallman

COPY TEAM

COPY CHIEF Emily S. Henderson

SENIOR COPY EDITORS

Diann Daniel, Cathy Mallen

EDITORIAL ASSISTANTS

Margaret Locher, Katherine Walsh

EDITORIAL INTERN

Christopher Lynch

ONLINE EDITORIAL

WEB EXECUTIVE EDITOR

Janice Brand

WEB EDITORS

Sandy Kendall, Paul L. Kerstein

ONLINE NEWS WRITER Al Sacco

ONLINE COPY EDITOR David Gradijan

RESEARCH

RESEARCH DIRECTOR

Lorraine Cosgrove Ware

RESEARCH MANAGER

Carolyn Johnson



CXO MEDIA INC.

INTERNATIONAL DATA GROUP

BOARD CHAIRMAN Patrick J. McGovern
PRESIDENT, IDG COMMUNICATIONS Bob Carrigan



©CXO Media Inc.

WHAT WE COVER, WHOM TO CONTACT

CIO CAREER

- Skills
- Job Specs
- Career Path
- Professional Development
- Personal Development

Meridith Levinson, mlevinson@cio.com
Stephanie Gelston, sgelston@cio.com

LEADERSHIP & MANAGEMENT

- Governance & Alignment
- Budget Management & IT Value
- Business Process Redesign
- Management Methodologies
- Project Management

Elana Varon, evaron@cio.com
Christopher Koch, ckoch@cio.com

SOURCING AND STAFFING

- Outsourcing/Insourcing
- Staffing
- Vendor Management
- Knowledge Management

Stephanie Overby, soverby@cio.com
Stephanie Gelston, sgelston@cio.com

RISK MANAGEMENT

- Security
- Privacy
- Business Continuity
- Compliance

Ben Worthen, bworthen@cio.com
Allan Holmes, aholmes@cio.com
Susannah Patton, spatton@cio.com

ENTERPRISE INFRASTRUCTURE

- Enterprise Architecture, SOA
- Middleware
- Enterprise Resource Management (ERP)
- Supply Chain Management (SCM)
- B2B Electronic Commerce

Christopher Koch, ckoch@cio.com
Ben Worthen, bworthen@cio.com

CUSTOMERS

- Customer Resource Management (CRM)
- B2C Electronic Commerce
- Business Intelligence

Thomas Wailgum, twailgum@cio.com
Susannah Patton, spatton@cio.com

TECHNOLOGY

- Emerging Technology
- Networking & Communications
- Data Center
- Storage
- Hardware

Christopher Lindquist, clindquist@cio.com
Thomas Wailgum, twailgum@cio.com

HEALTH CARE

Alison Bass, abass@cio.com

GOVERNMENT

Allan Holmes, aholmes@cio.com

COLUMN & DEPARTMENT CONTACTS

Applied Insight

Christopher Koch, ckoch@cio.com

Book Reviews

Elana Varon, evaron@cio.com

By the Numbers

Elana Varon, evaron@cio.com

Endlines

Alison Bass, abass@cio.com

Essential Technology

Christopher Lindquist, clindquist@cio.com

Forum

Cheryl Asselin, casselin@cio.com

InBox

Cheryl Asselin, casselin@cio.com

Keynote

Alison Bass, abass@cio.com

Martha Heller

Stephanie Gelston, sgelston@cio.com

Michael Schrage

Alison Bass, abass@cio.com

On the Move

Meridith Levinson, mlevinson@cio.com

Peer to Peer

Alison Bass, abass@cio.com

Susan Cramm

David Rosenbaum, drosenbaum@cio.com

Total Leadership

Elana Varon, evaron@cio.com

Trendlines

Elana Varon, evaron@cio.com

Washington Watch

Allan Holmes, aholmes@cio.com
Ben Worthen, bworthen@cio.com

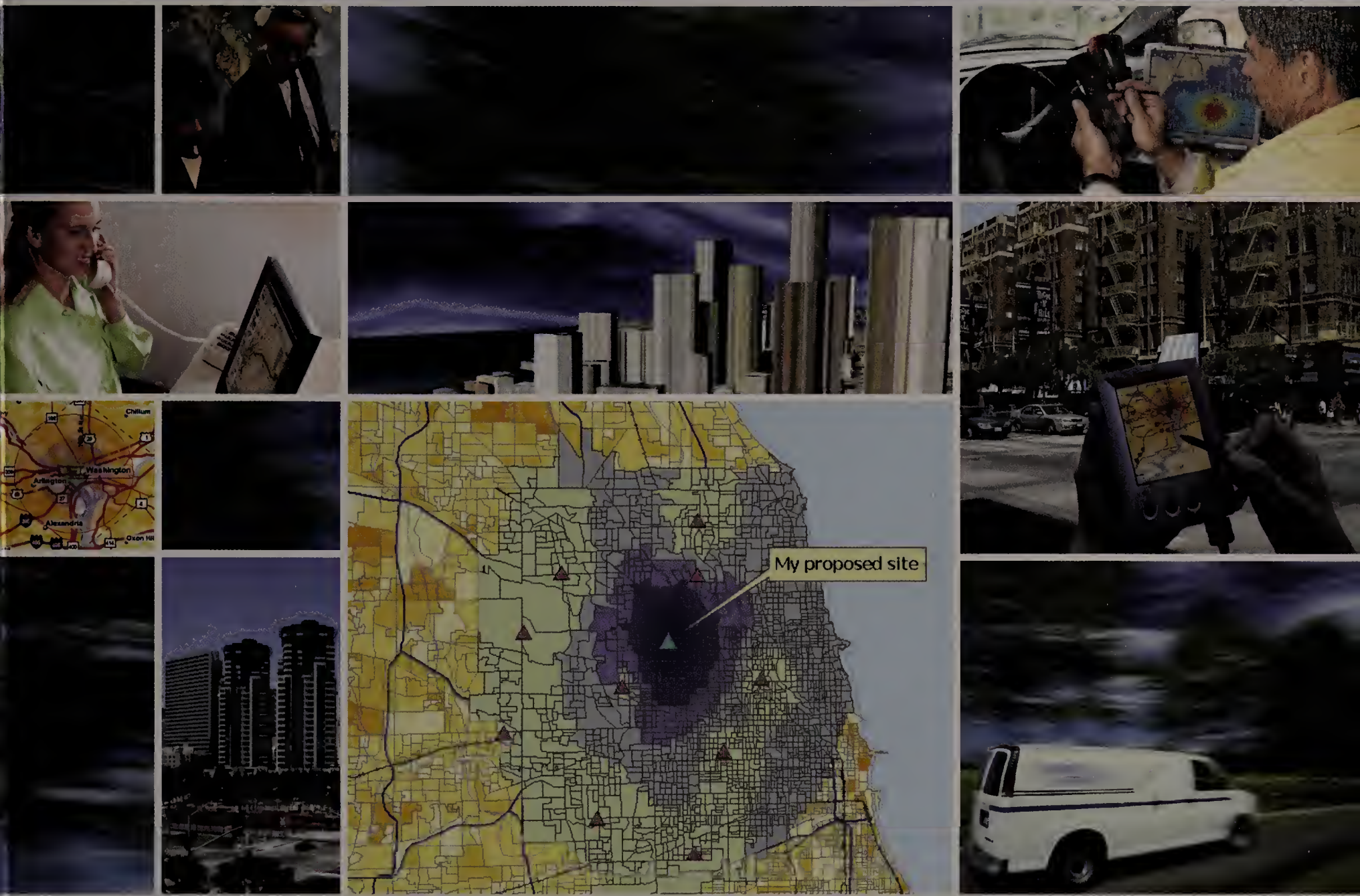
E-MAIL letters@cio.com PHONE 508 872-0080 FAX 508 879-7784 ADDRESS CIO Magazine, CXO Media Inc.,
492 Old Connecticut Path, P.O. Box 9208, Framingham, MA 01701-9208 WEBSITE www.cio.com

SUBSCRIBER SERVICES 866 354-1125 • Fax 847 564-9453 • E-mail cio@omeda.com

REPRINT SERVICES Jennifer Eclipse • PARS International • 212 221-9595 ext. 237 • E-mail jeclipse@parsintl.com

RIGHTS AND PERMISSION Yadira Pizarro • 212 221-9595 ext. 231 • E-mail yadira@parsintl.com

Location, Location, Location...



It's fundamental to your business. Are you leveraging your location data?

Customer addresses, time zones, office facilities, service areas, political boundaries, critical shipments, utility networks, field-workers, real estate, mobile assets, and warehouses—location is mission critical in every organization.

By leveraging the location information that is inherent in your information systems, you can manage your organization more efficiently and cost-effectively, helping you gain a competitive advantage.

ESRI technology is a standards-based, scalable, and interoperable platform that can exploit location data in your business processes. With ESRI geographic information system (GIS) technology, you can make location information and analysis available to the people in your organization—at all levels—who need it most.

To learn more about leveraging your location data, please visit www.esri.com/it or call 1-888-373-1192.

You have the location information; put it to work for you.





**THE
POWER
TO KNOW**

SAS SOFTWARE

SAS BUSINESS INTELLIGENCE

Better answers, faster.

ENTERPRISE INTELLIGENCE PLATFORM

DATA INTEGRATION

INTELLIGENCE STORAGE

BUSINESS INTELLIGENCE

ANALYTICS

Challenged with balancing efforts to support strategic initiatives while still lowering operational costs? SAS takes you beyond traditional BI query and reporting to a higher level of shared decision making that drives innovation. Our fully integrated Enterprise Intelligence Platform sets the foundation, linking technologies for data integration and storage, reporting and analysis. Proven software, industry-specific solutions and domain experience extend the value of your investment. Bridging the gap between what you have – growing expectations to deliver a return on investment – and what you want to achieve – increased profits, reduced risk and improved performance.

Want Proof? Find out why SAS is at work in 96 of the top 100 companies on the FORTUNE Global 500® – with customer retention rates exceeding 98% annually for 30 years.

www.sas.com/innovation ■ Free white paper



trendlines

EDITED BY ELANA VARON

NEW * HOT * UNEXPECTED

San Diego Tries to Learn from Contract Mistakes

OUTSOURCING In January, San Diego awarded a seven-year outsourcing contract worth approximately \$650 million to Northrop Grumman Information Technology to run the county's IT operations. It's the second such deal for San Diego. The first—a 1999 deal with Computer Sciences Corp.—was heralded as a test of whether wholesale outsourcing would work for local government but is mostly remembered for the controversy it generated over costs, service levels and a problematic ERP rollout. At the height of the troubles, the county threatened to hold CSC in breach of contract.

This time, it's going to be different. Or will it?

David Perara, an independent analyst who previously led Meta Group's price benchmarking group, says commercial companies also struggle with large outsourcing deals, and the second experience is usually better than the first. A problem with the first San Diego deal was a lack of sufficient detail in the contract regarding prices, responsibilities and service levels. (To find out more about San Diego's past outsourcing troubles, see www.cio.com/050106.) The county appears to have corrected that problem, according to outsourcing experts who reviewed the Northrop Grumman contract. "They clearly learned the importance of defining the service responsibili-

Continued on Page 14

What to Do with All Those Business Cards

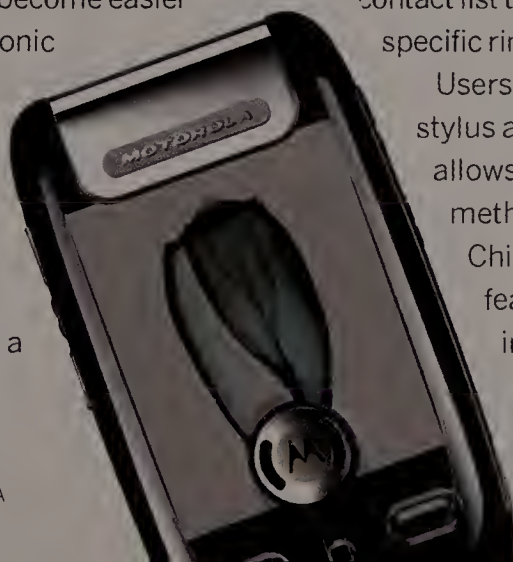
WIRELESS TELEPHONY The ritual is similar the world over: Two executives meet and exchange business cards. But if you're an executive in China, it's just become easier to transfer that information into your electronic Rolodex. A new Motorola phone, available in China and Hong Kong, packs a 2 megapixel camera that doubles as a business card scanner.

The clamshell-style phone, called Ming, is the first Motorola handset to incorporate the card-reader function, says Feizhou Guo, a Motorola spokesman in Beijing. The device,

which costs about \$500, also includes a suite of applications, including a document viewer, an e-mail client, a calendar and a contact list that lets users assign digital photographs and specific ring tones to contacts.

Users can input Chinese characters using the Ming's stylus and character-recognition software. The software allows for characters to be entered using a range of methods, including the Pinyin system for transcribing Chinese words using the Western alphabet. Other features include an FM stereo radio receiver, a built-in music player, a speakerphone function and support for Bluetooth.

—Sumner Lemon





A Fight About Rights to Copy

ONLINE MEDIA From the music industry's early entanglements with Napster to Sony BMG's recent release of CDs that created security holes on consumers' PCs, the transition from CDs to online music has been full of sour notes.

Only now, in addition to bemoaning the behavior of music consumers, the entertainment industry is pointing fingers at the companies that make digital rights management (DRM) technology. DRM defines how digital content such as music, video clips and movies is distributed, and controls consumer access to it. Right now, different consumer devices support different DRM standards—making for a costly and complex quandary for content providers: Which horse to ride? (To find out how media behemoth ESPN is coping with the problem, see "Game On," Page 60.)

Consumers generally decry DRM safeguards because they interfere in sharing content between a PC, iPod or mobile phone. There's also the issue of performance: Recent MP3 testing by CNET showed that audio playback with Microsoft's DRM-protected software resulted in up to a 25 percent loss of battery life; conversely, iPod users can get 8 percent more playtime running non-DRM-protected tunes.

"We'd like nothing more than for you to be able to download or transfer music securely between your phone, your home and work PC, a couple of your players and your home Hi-Fi system, for example," says John Kennedy, chairman of the International Federation of the Phonographic Industry, the trade body that represents record labels worldwide, during a recent BBC online chat. "It's the technology companies that hold the key to achieving this. They need to make proprietary systems interoperable with each other."

On the other hand, says David Rossien, a principal with management consultancy Adventis, music industry executives have yet to articulate a vision for online music, or a plan for achieving it. "They're still trying to figure out how it's all going to happen," he says.

—Thomas Wailgum

Good Spying Versus Bad Spying

PRIVACY A survey of 889 individuals by the Ponemon Institute found that a majority of people don't mind being spied on in certain situations.

For example, 66 percent don't mind when their customer service calls are recorded, and 57 percent don't care if the boss keeps tabs on their e-mail and Web surfing at work. In addition, 57 percent think it's OK for the police to use hidden cameras to monitor traffic.

However, 71 percent of those surveyed are against both government wiretapping of telephones and spyware that monitors their online browsing or shopping.

Respondents said their opinions about surveillance are most influenced by whether there is legal protection or recourse against abuses by the organizations conducting the surveillance.

—Elana Varon

San Diego

Continued from Page 13

ties between themselves and the service provider," says Perara.

For instance, the county has created 59 line items to delineate responsibilities for running the help desk. Among those responsibilities, Northrop Grumman must produce and submit help desk solutions and service-level requirements, and the county has responsibility for reviewing and approving them.

Consistent with commercial best practices, the contract also breaks out pricing for services into components. Desktop maintenance costs, for example, are broken out into hardware, software and printer maintenance, among other line items. The first contract included only a lump sum annual service charge, Perara says.

But while it's generally better to provide more detail than less, the county may have overcorrected in some spots, particularly in the voluminous details concerning service-level definitions. A 152-page document defines the operational services and 76 minimum acceptable service levels, each with its own penalty (transaction response time has nine service levels associated with it, and desktop repair has 15).

"You should only define the service levels that are truly important and provide sufficient incentive for the vendor not to miss them," says Adam Strichman, vice president of outsourcing advisory firm Nautilus Advisors. With so many service levels in the new contract, he says, the contractor would have to miss many service levels at the same time before a major financial deterrent would become evident.

Another red flag: The contract with Northrop Grumman stipulates flat unit pricing for the duration of the relationship. Fixed prices make the customer happy early on, says Strichman, when they're paying less than market rates. But as the deal is renegotiated over time, service delivery can suffer. Most commercial customers avoid lengthy fixed-price deals, says Perara. But many government entities, which value predictable costs more, still gravitate toward them.

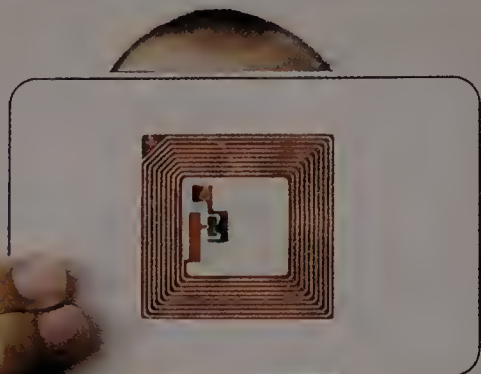
—Stephanie Overby



Find tools and guidance to defend your network at microsoft.com/security/IT

- ▶ **Free Tools and Updates:** Streamline patch management with automated tools like Windows Server™ Update Services. And verify that your systems are configured for maximized security with Microsoft® Baseline Security Analyzer.
- ▶ **Microsoft Security Assessment Tool:** Complete this free, online self-assessment to evaluate your organization's security practices and identify areas for improvement.
- ▶ **Antivirus for Exchange:** Download a free trial of Antigen® for Exchange and arm your e-mail server with powerful multi-engine protection from viruses, worms, and inappropriate content.
- ▶ **Learning Paths for Security:** Take advantage of in-depth online training tools and security expert webcasts organized around your specific needs. Then test your security solutions in virtual labs, all available on TechNet.

In China, More Chips Are in the Cards



TRENDLINES

RFID China's Ministry of Public Security, which oversees the country's police force, plans to issue more than 1.3 billion new resident ID cards with radio frequency identification (RFID) chips, according to In-Stat China, a market research company.

Based on the number of cards to be issued, the rollout represents one of the largest RFID projects in the world, according to Anty Zheng, research director at In-Stat China.

RFID tags can send and receive data over short distances. As a result, an RFID reader that is within roughly 8 to 12 inches of a card can read the data on it, Zheng says. The cards are used to store basic personal information, such as the cardholder's name and birth date.

The Chinese government has so far issued 102 million of the cards, and plans to issue more than 300 million per year for the next several years, the ministry said in March.

In-Stat estimates that 100 million RFID tags were sold in China during 2005. The company expects the number of tags shipped annually in China to rise quickly in coming years, hitting total sales of 2.9 billion tags by 2009. ID cards are expected to account for most of the tags used through 2008, at which time demand for RFID tag use in retail stores is expected to dominate the market, In-Stat says.

—Sumner Lemon

Big Company IT on a Mid-Market Budget

MANAGEMENT REPORT IT departments in mid-market companies provide many of the same services as those in large enterprises, but without access to the same resources. In a recent series of reports about IT management in small and mid-market businesses, Gartner suggests that CIOs in these companies can overcome limitations such as smaller staffs and smaller budgets through methods such as recruiting versatile employees, outsourcing, providing staff with training and other “soft” benefits, and disciplined budgeting.

John Bace, VP and research director of public policy and IT at Gartner, suggests hiring “versatilists”: self-starters who are good at collaborating with others and who are willing to learn multiple technologies.

“They’re more useful to the entire organization because they bring a portfolio of skills rather than just one finely honed expertise,” Bace says.

Outsourcing also increases flexibility and the range of skills available to a company, as well as increasing its ability to scale projects up or down as business conditions change. But while Gartner

strongly recommends outsourcing, the report also notes that mid-market CIOs are reluctant to do it because they don’t understand how they will save money.

Meanwhile, cross-training internal employees in a variety of skills is a way to make the most of what you have. This can include rotating job assignments, as well as courses from vendors and professional organizations. “Making these opportunities available to employees gives them the chance to feel as though they are maintaining their professional edge,” says Bace. Soft benefits such as training also help attract and retain staff in the absence of higher salaries. Other perks, such as casual dress and flexible work hours, “keep employees from focusing solely on the bottom line of their paycheck,” he adds.

One area where mid-market CIOs excel is in budget management, because they have relatively small budgets to work with, Bace says. Careful budgeting ensures credibility with senior management and increases the probability of getting additional funding for key IT initiatives like improving the business skills of IT staff—the number-one IT initiative for mid-market CIOs, according to Gartner.

—Katherine Walsh

The Mid-Market's Management Priorities

How smaller companies rank their priorities compared with large enterprises

Management Initiative	Small/Mid-Market Companies	Large Enterprises
Improving IT staff business skills	1	4
Reducing IT risk	2	1
Improving IT governance	3	3
Integrating business processes	4	7
Replacing or integrating legacy systems	5	9

SOURCE: Gartner

A man in a dark suit and white shirt is shown from the chest up, looking directly at the camera with a serious, thoughtful expression. His hand is resting on his chin. In the background, two small devils in red suits and black hats stand on either side of him. The devil on the left is holding a pitchfork and has a speech bubble above it that says "lose money". The devil on the right is also holding a pitchfork and has a speech bubble above it that says "lose customers".

lose money

lose customers

WHEN SERVING YOUR CUSTOMERS, WHATEVER CHOICE YOU MAKE, YOU'RE TOAST.

You know that the only way to succeed is by serving your customers better. But what organization can afford to throw endless dollars at improving the customer experience? With RightNow, you don't have to make a deal with the devil.

RightNow provides a breakthrough solution that lets you enhance your customer experience while reducing costs. By delivering knowledge at every customer touchpoint, RightNow helps you grow your business, one customer

experience at a time. We've enabled more than a billion successful customer interactions for our clients in every major industry. Chances are, we can help you, too.

Find out why RightNow leads in client satisfaction. Download your free executive summary of CRMGuru's Solutions Guide at www.rightnow.com/toast or call us toll-free at 1.877.363.5678.

**RIGHT
NOW**
TECHNOLOGIES

A **SUPER-FAST** Computer Gets Faster

RESEARCH IBM has developed technology to speed up the way large computer networks access and share information, with implications for solving problems such as issuing tsunami warnings and improving medical research.

Under a project code-named "Fastball," IBM's ASC Purple supercomputer—the third most powerful in the world—has been able to achieve 102GBps of sustained read-and-write performance to a single file. That's the equivalent of downloading 25,000 songs in a second over the Internet, according to the company.

IBM's General Parallel File System software was used to manage the transfer of data between thousands of processors and disk storage devices. IBM said it had to enhance the software in several areas to handle such fast data rates. For example, it added new capabilities to orchestrate the flow of data between all of the hardware components in the system.



"If they all go real fast at the same time, you get a traffic jam and performance goes down," says Chris Maher, director of high-performance computing development for IBM's Systems and Technology Group.

ASC Purple is housed at Lawrence Livermore National Laboratory. IBM supplied the computer to the U.S. Department of Energy and the lab for use in nuclear weapons research. In the Fastball demonstration, 1,000 clients requested a file at the same time. Through virtualization, the software then spread that file across hundreds of disk drives.

Maher says this kind of computing could be used for applications such as a tsunami warning device that would scrutinize huge amounts of information from the ocean and analyze it quickly, or for homeland security, to scan images of people and match them against large databases. Other applications could include medical research and online gaming.

—Shelley Solheim

New Flight Plan for Airline CIOs

ON THE MOVE

Financial troubles at Delta, United Airlines and JetBlue are raising the profiles of



Todd Thompson, JetBlue

CIOs at these companies. In March, JetBlue's **Todd Thompson** was promoted to senior VP and CIO. He reports to the low-cost airfare provider's CFO, John Owen. Thompson first boarded JetBlue in January 2004 as VP of IT (replacing

Jeff Cohen, JetBlue's first VP of IT) and was named CIO last year. The company also promoted **Tim Hickey** from director of IT to VP of IT operations. He reports to Thompson. The appointments came six weeks after JetBlue announced a \$20 million loss for 2005.

Also in March, United CIO **Gary Kelly** saw his role expand. Senior VP of Strategic Sourcing Rick Poulton announced his resignation from the Chicago-based carrier, and Kelly is now responsible for strategic sourcing, continuous improvement, industrial and process engineering, and operations research in addition to IT. United exited bankruptcy in February. Kelly, former Sears

Roebuck CIO, joined United last fall, replacing **Nirup Krishnamurthy**, who left United to join asset management services provider Northern Trust as its executive VP and CTO.

At Delta, **Shirley Bridges** was promoted from COO to president and CEO of the airline's IT subsidiary, Delta Technology, a week before Delta released its 2005 earnings in February. Bridges was also named the airline's CIO. Her predecessor, **Brian Leinbach**, left his post as senior VP and CIO of Delta and president and CEO of Delta Technology late in 2005. Bridges is the third CIO in a little over a year for Delta—**Curtis Robb**, who held the job for three years,



Shirley Bridges, Delta

retired April 2005.

Steve Kendrick, a recruiter with Spencer Stuart, says it's common for airlines to look internally for talent during trying times. "When you need someone to participate at a senior level in a time of crisis, you want someone who's credible, understands the business and has good relationships internally," he says.

—Meridith Levinson

CIO.COM Read Meridith Levinson's **MOVERS AND SHAKERS** blog for the latest moves. Find it at blogs.cio.com.

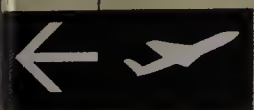
Who helps Business travel lighter with new communications solutions?

We do. You know what it's like. You're on a business trip and it seems like you're hauling around half your office. Your cell phone, your PDA, plus a suitcase full of documents. And then there's your laptop, which can't seem to connect to the network from your hotel. Siemens HiPath® solutions enable you to carry just one device—and you decide which one. So you can stop overpacking and focus on your business. HiPath. Total Business Communications.

Interested? Contact us at www.usa.siemens.com/openscape

SIEMENS

Global network of innovation



Measuring the Impact of Software on Profits

METRICS There's more than one way to measure the impact of software investments. Take the dispute between SAP and Nucleus Research over a study by Nucleus that challenges SAP's claim that its customers are "32 percent more profitable" than companies who don't use its software.

Nucleus analyzed 81 public companies that use SAP and found that they are, on average, 20 percent less profitable than peers that don't use SAP products.

The research company collected return on equity data from SAP customers' financial reports gathered from Bloomberg.com and compared the findings with industry averages provided by Hoovers.com, a business information website. Among the SAP customers included in the

research are Anheuser-Busch (above average), DuPont (below average), Ericsson (above average), Kraft Foods (below average) and Volkswagen (below average).

William Wohl, a spokesman for SAP, says the study misrepresents SAP customers' profitability in three ways: The sample size encompasses only "a quarter of 1 percent" of SAP's customer base, and thus is statistically invalid; Nucleus's comparisons to industry return on equity averages are inappropriate because they don't compare companies to their peers; and its method for calculating those averages is misleading. *—Al Sacco*

The Phone Is Still Better than E-Mail

CUSTOMER SERVICE E-mail customer service was worse in 2005 compared with previous years, according to a JupiterResearch study released in March.

Jupiter sent test inquiries to 255 U.S. businesses with websites, 234 of which offer customer support by e-mail. Twenty-five percent of the companies answered the e-mail questions within six hours. But fewer companies met the six-hour mark compared with previous years: In 2004, 28 percent of companies answered within six hours, and in 2003, 27 percent did.

In the 2005 study, 20 percent of the companies responded between six and 24 hours. At the bottom of the scale, 39 percent of companies took three or more days to reply or never responded at all—more companies than in previous years.

"Those that are answering e-mails on average are doing better, but unresponsiveness continues to rise," says Jupiter associate analyst Zachary McGeary.

Slow or nonexistent e-mail replies negatively affect a company's revenue and can increase a company's expenses as well as hamper e-commerce, he says.

For example, after a poor customer service e-mail experience, consumers might sour on the company and be less inclined to buy its products online and offline. They might also tell acquaintances about the subpar treatment. Snubbed online shoppers are also likely to attempt to contact the company via phone, adding to customer service costs, McGeary says.

Jupiter's research indicates that consumer e-mail questions will increase in

coming years, with the overall volume expected to increase 23 percent from 2005 to 2006, and an average of 18 percent a year between 2006 and 2010.

Fewer than half of polled sites acknowledged consumer questions with an automated response, although some industries, such as music, retail and travel, fared better in this category. Financial companies were least likely to send acknowledgements.

Failing to acknowledge an e-mail with an automated response violates consumers' online service expectations, says McGeary. For example, he adds, "You don't expect receipts from e-mail with friends or family, but you do with retailers because online purchasing requires buyers to place sensitive information, like credit card numbers, on the Web." *—Fred O'Connor*





CIO in Paradise

We are MAS Holdings - A vertically integrated global Apparel Company headquartered in Sri Lanka with a turnover of USD 600 million and business interests spanning over 10 countries. We are a supplier of Intimate apparel, Activewear and Swimwear to renowned global brands and our strategic partners include Victoria's Secret, Triumph, Gap, Nike and Speedo.

We are looking for a customer focused visionary with extensive experience in operations, change management, and SAP at a senior level in an FMCG or "order to cash" environment in a global multinational organization with a turnover of USD 2 Bn.

As our Chief Information Officer, your role will be to envision and articulate the information needs of the Company to help us align and technically integrate our business strategy with that of our strategic partners.

If you would like to have an informal discussion about the role please contact Deepthi de Silva, Director Group Human Resources on +94 (077) 768-5495 or send in your resume to cio@masholdings.com.

All inquiries and applications will be treated with strict confidentiality.

Your potential. Our passion.
Microsoft

A Global Hotel Company Analyzing 1.4 Million Records a Day.
Running On Microsoft SQL Server 2005.



How does Hilton forecast demand for its 370,000 rooms and its catering services? They import data from six systems into one data warehouse requiring 7 million rows, and running on SQL Server™ 2005 with 99.98% uptime.* See how at microsoft.com/bigdata

Microsoft
SQL Server 2005

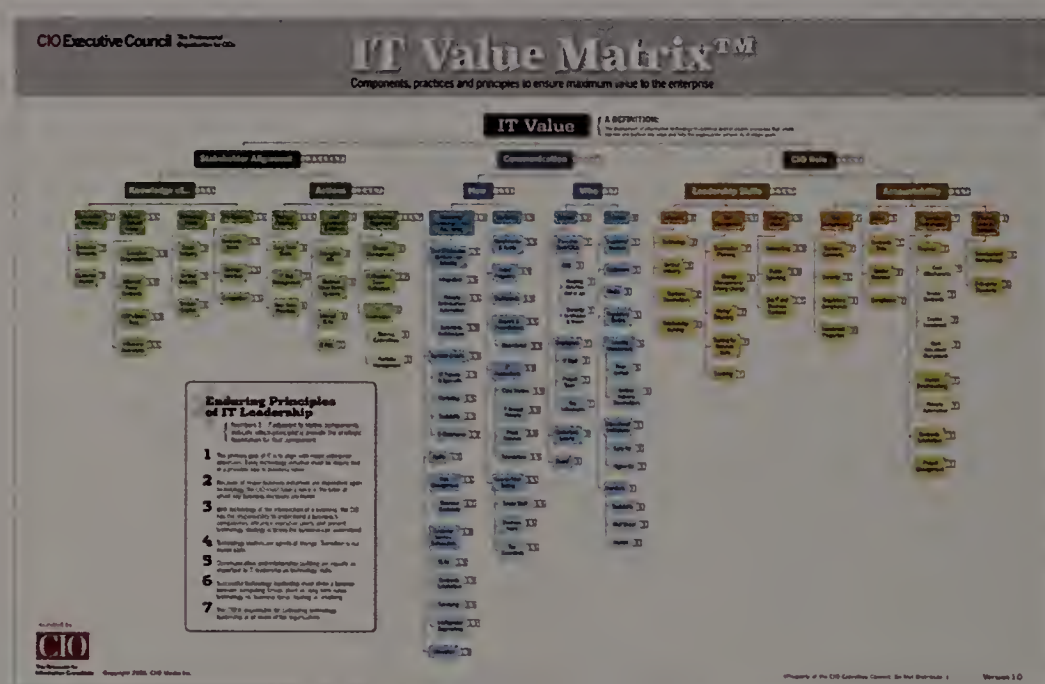


*Results not typical, and are based on use with Windows Server™ 2003 Enterprise Edition. Availability is dependent on many factors, including hardware and software technologies, mission-critical operational processes, and professional services. © 2006 Microsoft Corporation. All rights reserved. Microsoft, Windows Server, and "Your potential. Our passion." are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

How do you Maximize the Value of IT to the Business?

IT is still one of the most misunderstood functions in business. The CIO Executive Council, a professional community developed by CIOs, has focused its members' collective effort on this challenge. Their initiative has resulted in groundbreaking tools—the IT Value Matrix and Knowledge Center™—to help leverage the value of IT throughout the organization.

The IT Value Matrix illustrates the principles and practices essential to creating, identifying and communicating IT's value to the enterprise. Its online Knowledge Center provides best practices contributed by Council members, supplemented by case studies and how-to articles from *CIO* magazine that are grouped in categories that correspond to all the components of the Matrix.



Visit www.cioexecutivecouncil.com/it_value to get your own copy of the Matrix and to watch the IT Value webcast, presented by Agrilience CIO and Council member Steven John.

CIO Executive Council
The Professional Organization for CIOs

The CIO Executive Council was created by readers of *CIO* magazine and leaders within the community of CIOs to leverage the individual and collective strengths of its members both to serve as unbiased and trusted advisors to each other, and to advance the CIO role and profession. In just two years, more than 300 CIOs worldwide from various sectors and industries have identified with the Council's vision and committed to assist each other, cultivate their own careers and those of their team, and advance the role of the CIO. **To inquire about membership, visit www.cioexecutivecouncil.com.**

Founded by



**Business
Technology
Leadership**



change artists

Advertisement

Host John Gallant



The CEO and CIO of FedEx are meeting on May 9th.

We booked the room.

Watch "Change Artists"

A conversation on strategy, technology and change.
With FedEx CEO Fred Smith and CIO Rob Carter. A live
interactive Web event, May 9th at 11:00 a.m. EST.
Moderated by IT journalist John Gallant. Produced by
HP and broadcast by CNN and CIO magazine.
Sign up now at hp.com/go/changeartists



“Change Artists” explores the dynamic pairing of strategy and technology.

We invite you to join the conversation.

CEOs and CIOs who create opportunity are change artists. “Change Artists” is a live Web series that explores how they do it.

On May 9th at 11:00 a.m. EST, we will feature CEO Fred Smith and CIO Rob Carter of FedEx.

FedEx Corporation is a \$31 billion global transportation and logistics company. More than 260,000 employees and independent contractors worldwide handle more than 6 million shipments each business day. CEO Smith and CIO Carter will explain how they’re staying ahead of potential issues with those 6 million shipments.

They’ll also answer your questions live.

But “Change Artists” goes beyond the CEO/CIO conversation. It’s a program designed to help you manage—and master—change.

Log on to hp.com/go/changeartists. You’ll find practical ideas from CIO

magazine. Interactive tools that reveal areas of change in your company, designed by HP. As well as revealing case studies on Fortune 500 companies.

And, of course, you’ll get the latest thinking on key issues raised during the “Change Artists” program. For example, IT consolidation.

Consolidation is undergoing dramatic change. It’s not just about cost savings, it’s about increasing business value.

The “Change Artists” website currently provides a detailed overview of IT consolidation, and reviews the key elements of a consolidation program.

You’ll learn about companies that have moved from IT as a cost center to IT as a driver of business value.

“Change Artists” taps into executive insight, industry analysis, and the unique perspective of global business and technology leaders. The goal: to help inspire your own transformation journey.

Everyone talks about change. “Change Artists” will make you a leader in that conversation.

Get started at
hp.com/go/changeartists

Produced by:



Broadcast by:




change artists

ESSENTIAL technology

FROM INCEPTION TO IMPLEMENTATION—I.T. THAT MATTERS



To gain the business-IT alignment promised by service-oriented architecture, CIOs have to focus on process and architecture—not just technology

SOA's True Challenge—It Ain't Technology

BY GALEN GRUMAN

I.T. ARCHITECTURE The term service-oriented architecture (SOA) hadn't gained currency in 2002 when TrueCredit, a subsidiary of the TransUnion credit verification agency, began deployment of an enterprisewide portal. CIO Scott Metzger's goals were simple: Identify the business processes and the IT functions to be delivered through the portal, and reuse software wherever possible to reduce development cost and speed deployment.

But Metzger soon realized that the effort was about more than this one application; it was an excellent excuse to begin mapping out the company's most important business processes to create an architecture that would let IT develop and modify the supporting applications easily as business needs changed. Call it SOA or whatever you want, says Metzger, but for him, the shift in thought that began with the portal application was a turning point in IT's relationship with the business. "[We have] a much closer relationship with business [now]. It's a great way to unify the organization," he says. A March 2006 survey by *CIO* and *Computerworld* shows that 77 percent of enterprises adopting SOA seek greater business flexibility.

In his eureka moment, Metzger also realized a key strategy that has guided his SOA effort ever since: "It's not a technology road map but a business plan. Find a way to articulate the actual business process independent of any technology. That will best protect your SOA investment in the long term." Since 2002, Metzger has built a common portal and services manager to deliver the company's various services—including credit processing, payments management and credit monitoring—both internally and to external customers.

The importance of process in SOA means CIOs should be addressing architectural issues at the same time that they consider purchasing or implementing SOA infrastructure, says Ron Schmelzer, a sen-

"SOA is not a technology road map but a business plan."

—Scott Metzger, CIO, TrueCredit

ior analyst at SOA research firm ZapThink. "You can purchase an SOA infrastructure, but it won't be as useful as it can be unless an architectural plan driven by business process is in place," he adds.

That focus on process rather than on specific technology is what lets an SOA deliver on its promise of true IT-business alignment. But it also introduces new challenges for CIOs—challenges that stretch IT's abilities in areas that have been chronically underdeveloped: process and architectural planning. Their staffs will also be stretched. In short, CIOs who expect that they can do SOA the same way they've always done technology implementations risk being blindsided.

CHALLENGE 1: Deploy in Pieces But Create a Long-Term Plan

An SOA involves years of effort to get its ultimate result. That's why respondents to

SOA's Technology Underpinnings

Although service-oriented architecture (SOA) is not about technology, technologies can help you deploy an SOA. While there are many good products available, the market is just beginning to mature, notes Ron Schmelzer, a ZapThink senior analyst. That's why so much of the supporting systems for SOA efforts today rely on human effort, such as having a project review team that knows what services already exist and can be used for a proposed new project. Still, a few technologies are emerging now to help ease the SOA effort:

1. Enterprise service bus (ESB): A variation of an application server or EAI platform, an ESB orchestrates the communication among services, as well as with the user and any data sources. "SOA in today's world is very message-centric," says Sandra Rogers, program director for SOA, Web services and integration at IDC. Some large enterprises will have an appropriate messaging system in place, she says, but most will need to upgrade their systems to adopt current standards and move beyond simple data transfer and application integration.

2. Service registry or repository: This database system tracks the various service components available for reuse and publishes available services to business analysts and external partners so they know what's available. For example, Sprint Business Services makes its registry available via the Web to encourage use of its services, notes Vijay Musuvathy, manager of solution architecture. Unlike a traditional database, a registry must also store the context of the service, which defines when and how it should be used, in the form of metadata.

3. Master data management systems and metadata repositories: These two categories of products help enterprises manage their data in the same distributed, composite way that they'll manage business logic through SOA services. This ensures that data's meaning is understood by all services that use it, so no hidden assumptions end up corrupting the results that services deliver when using or generating the data.

4. User interface management: In a few years, "the biggest development will be the whole user interface space," says IDC's Rogers. As more services exist in everything from Web portals to office tools, "everything will be a producer or consumer of a service," and managing the user interface across everything will require a service-oriented approach as well, she says. The emergence of asynchronous Java and XML (Ajax) "is a start but it's not enough" for SOA's broad reach, Rogers says.

—G.G.

the *CIO/Computerworld* survey cited the challenge of shifting to an SOA architecture while meeting current business needs as the top concern (63 percent).

The trick is to not deploy SOA all at once, because by the time most "big-bang" efforts are completed, the business needs may have changed and much of the implementation will be outdated, says Sandra Rogers, program director for SOA, Web services and integration at research company IDC (a sister company to *CIO's* publisher). Instead, create the architecture and deploy specific services in phases, perhaps by focusing on

one application domain at a time or choosing projects based on business urgency. "You can build incrementally," says Suzanne Peck, CTO of the District of Columbia. In 1999, Peck began reorganizing 370 legacy systems into nine functional groupings in preparation for a new SOA. The services include both new code and Web-services-based interfaces to legacy code, as well as new composite applications.

But until you develop the underlying architecture, you can't build anything. "How you're going to manage version 2 [of your services] and beyond is important to

SOFTWARE SOLUTIONS FOR GREAT COMPANIES.

NOT JUST GREAT BIG COMPANIES.

MORE THAN 65% OF SAP CUSTOMERS ARE SMALL OR MIDSIZE COMPANIES:

You don't have to be a big company to face big challenges. Or to have big expectations. That's why thousands of small and midsize companies around the world maximize their advantage with flexible, affordable and proven software from SAP. Find out how SAP, together with our network of qualified channel partners, can be a good fit for your business — whatever its size. Visit sap.com/yoursize

THE BEST-RUN BUSINESSES RUN SAP®



think through up front," says Metzger. "It's important to understand how volatile a particular business process is."

Any organization implementing an SOA should create a basic architectural model for a manageable piece of the business, and then apply that model opportunistically to individual projects, using them both to test

Stubbs, CIO at Sony Pictures Entertainment, the distribution arm of Sony. Sony Pictures' SOA efforts have resulted in a common service for managing the licensing rights of movies and TV shows across several lines of business (including DVD sales and theatrical releases) affecting 39 business units (including legal and marketing). The IT

so start out small and do a lot of retraining," says TrueCredit's Metzger.

CHALLENGE 4: Apply SOA Principles to Your Data Too

Often overlooked in initial SOA efforts is the importance of treating data—not just application functionality—as a service, says ZapThink's Schmelzer. In an SOA, multiple services residing in multiple applications might combine to execute a business process. If each service uses different data sources, or even the same data source in different ways, the results might not be what you expect, he says.

For example, Metzger enforces strict separation between services that access and store data and those that act on the data, such as performing calculations. He also keeps presentation services—those that format the data for the user or for reports—separate from other services. This helps ensure that all services have the same context for a specific piece of data.

THE PAYOFF: Real Business-IT Alignment

All of these challenges underscore how different SOA is from traditional enterprise technology efforts. The CIO must put the technologist hat to the side and become an advocate for business processes. Better knowledge of those processes leads to better technology design, which reduces the cost of maintaining existing systems—something that now accounts for 70 percent to 80 percent of IT budgets, says Schmelzer.

"We've been talking for years about IT-business alignment," says IDC's Rogers. An SOA lets you actually achieve that goal—if you can develop the architectural vision and execute on it over the long term. The process is not easy, but early adopters like Peck, Metzger and Stubbs would never go back to the traditional IT approach. "A lot of [D.C.] government would not work without SOA," says Peck. **CIO**

Galen Gruman is a San Francisco-based freelance writer. Contact him at ggruman@zangogroup.com.

Don't deploy SOA all at once. Instead, create the architecture first and then deploy specific services in phases.

the model and to deploy the SOA in pieces, says ZapThink's Schmelzer. That architecture includes identifying all of the business processes, the interactions among them, the specific applications and functions (existing and needed) to deploy them, and the flow of business logic and data to execute the business processes. Identifying these pieces lets you understand common functions that can be standardized across all processes, as well as identify the compliance, security and management requirements.

Be prepared to spend up to a year doing the initial business process and architectural analysis, advises TrueCredit's Metzger. But that extra time spent up front will pay off exponentially, he says. Today, new services at TrueCredit have only a six-week development cycle. At the District of Columbia, some services are delivered in as little as 12 weeks (more complex ones take four to six months).

CHALLENGE 2: Take Governance Seriously

Because SOA is ultimately about creating and managing IT processes in support of business processes, governance is critical. "Development organizations are used to building applications, but now they are assembling parts," says Dennis Gaughan, research director for IT governance at AMR Research. And that development has to be done in a standard way—which can rub developers the wrong way. "SOA takes a lot of the control away [from individual developers], so you get resistance," says John

group is now using the SOA to deploy common Web services for its SAP Financials processes like accounts receivable.

A way to enforce the SOA principle of reuse is to have a review board that evaluates new applications to ensure they are really needed. Sony Pictures and TrueCredit both use such a board. The review board should include the CIO or CTO, chief architect, key technology and process experts from IT, and key business analysts, says IDC's Rogers.

CHALLENGE 3: Rethink Your Talent Pool

In addition to architecture staff that develop and manage the SOA's big picture, the CIO will need a development staff that is comfortable with both business processes and the services approach to developing applications. And business experts who can partner with IT on process identification and implementation are also critical—the CIO's organization can't do it all.

"Retraining, hiring and redeploying are all needed," says Rogers, so most CIOs will bring in some key hires experienced with SOA and retrain the existing staff in SOA-oriented thinking. "It's an ongoing process,

Keep Up Online

Technology Editor Christopher Lindquist scours the **best of what's on the Web** when it comes to emerging technology. Read his blog, **TECH LINKLETTER**, at blogs.cio.com.

CIO.COM



► VIRTUAL REALITY APPLICATION CENTER
Iowa State University

INFORMATION TECHNOLOGY COMPANIES **LIKE WHAT THEY SEE** IN IOWA.

BE ON THE EDGE OF TECHNOLOGY IN IOWA, home to the fastest-growing economy in the Midwest. Iowa's vibrant I.T. sector employs more than 46,000 people at 3,000 companies. Here, unique partnerships between business and leading public universities create an environment of innovation and productivity. Iowa institutions rank among the nation's leaders in numbers of licenses issued to businesses and options executed by industry for university-developed technology. Iowa's I.T. workforce is one of the most productive anywhere — a byproduct of the life|work balance and off-hours amenities that have helped create the nation's 3rd-most-livable state. See why Iowa is virtually perfect.

Log on to iowalifechanging.com or call 800.245.IOWA.

IOWA
life | changing®

www.iowalifechanging.com

The Worst Job in IT

Change is unstoppable, and CIOs are climbing aboard. Nice for them. But they risk losing their staff unless they communicate better.



For as long as I can remember, there has been a tacit understanding that the worst job in IT is the CIO's. While many IT professionals do their work guided by the principles articulated in the old engineering adage, "Cost, quality and time—pick two," CIOs are expected to deliver on all three.

Well, the times they are a-changing. It recently occurred to me that the only thing worse than being in charge of an IT organization nowadays is *not* being in charge. Right now, driven by their need to respond to the business's heightened expectations of what IT can and should deliver, and their own understanding of changing business and technology imperatives, CIOs are shaking up their departments, changing the rules of governance, architecture, process, costs and staffing under which they operate. (For more on the nature of this change, see "The Postmodern Manifesto," Page 50.) CIOs are turning up the heat on their organizations to make it all happen.

It's not a whole lot of fun being on the receiving end of all these demands. That hit home for me last week while facilitating a planning meeting. The strategic challenge came down to this: How can an overburdened IT staff deliver while operating under instructions to offload their work to external providers when the governance, architectural and process mechanisms that would support it effectively are not in place?

This challenge is shared by most IT organizations and, in many ways, it's hampering their ability to execute. Everyone knows that work would be a lot easier and, for now, would get done better, faster and cheaper if one's own people were on point. Most IT professionals understand that organizational and sourcing changes are necessary to position their depart-



How the show always goes on. To a packed house.

Whether it is "Madama Butterfly" or Michael Bublé, every ticket at Sydney Opera House is a hot one. That's why they chose HP Integrity servers with Intel® Itanium® 2 processors. Now twelve times as many customers can access the ticketing system simultaneously, and downtime is a distant memory. Norman Gillespie, CEO says, "Maintaining our reputation is crucial. HP Integrity Itanium-based systems help ensure our customer experience is virtually flawless." itanium-integrity.com

ITANIUM+INTEGRITY. ON AND ON AND ON.

©2006 Hewlett-Packard Development Company, L.P. All rights reserved. Intel, the Intel logo and Itanium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Sydney Opera House is a trademark of the Sydney Opera House Trust.



invent

ments for the future, but there's little enthusiasm within the IT department for this transformation because the changes are being done to them, not for them.

A Day in the Life

Imagine what it's like to work in a typical IT organization today. Due to increased demands and headcount constraints, people are busier than ever. Jobs aren't as much fun as they used to be because individuals have less control over how their work gets done. People are expected to transfer work that they understand and enjoy to outsiders. Many feel that they spend their days helping to ensure the success of their external service providers while simultaneously sabotaging their own.

To many, it feels like they are being asked to prepare the instruments of their own demise: "Get your work well-defined, organized and managed so that we can give it to somebody else." While they're busy reshaping their organizations, many CIOs are neglecting one of their fundamental leadership responsibilities: to help their people envision the future and their roles within it. It's not sufficient to articulate the promise of tomorrow in terms of the marketplace. To resonate, visions and strategies must relate to the realities and concerns of the individual laborer in the IT fields.

For many leaders, this lack of sensitivity to the needs of the individuals within their organization is not just an oversight; many of them are unable to articulate what they have not yet fully internalized. On a typical day in the typical IT department, life is about execution, not reflection, and staff interactions focus on the near-term "how" rather than the more meaningful, but less immediate, "What about me?"

The Leadership Challenge

Leaders cannot afford to let individuals answer the "What about me?" question on their own. Without a clear picture of the future and their role within it, people will assume that the future doesn't include them. The best and brightest will survive, but they will not necessarily remain with the organizations that need them. Solid, long-tenured professionals with the intellectual capital necessary to keep things running may stick, but without the sense of connection and engagement necessary to protect the organization's long-term health.

One of the ways leaders can answer the "What about me?" question is through storytelling. Stories add meaning and context to work. What's needed is a cogent tale explaining why IT's future is brighter now than at any time in the past.

I do, in fact, believe that the future of IT is brighter than ever, and I'll share my version of the IT strategic story in next month's column. In the meantime, take a look at Mark Walton's book, *Generating Buy-In: Mastering the Language of Leadership*, and begin crafting a story for your staff that articulates how IT will exceed the expectations of the enterprise while ensuring the success and satisfaction of all those involved. **CIO**

Reader Q&A

Q: Can you suggest references that address the IT organization of the future and indicate how others have defined and communicated this to their teams?

A: I'm not aware of any great references for the IT organization of the future. Although researchers and academics seem to agree with CIO Executive Editor Christopher Koch's statement (in "The Post-modern Manifesto," Page 50) that the future IT organization will be "smaller, more distributed and dependent on a tightly integrated supply chain of vendors," there seems to be a lack of agreement as to the competitive importance of IT and the role that IT should assume vis-à-vis the business.

I think it may be most instructive to study the evolution of the financial organization within the enterprise as an indicator of how IT will evolve. Fundamentally, the roles of the two organizations are similar, and finance has figured out how to gain an increasingly more strategic, trusted adviser role while at the same time delegating day-to-day decision making and responsibility for finance throughout the organization.

Q: Stress for the workers on the bottom of the pyramid is not new. What reduces stress for the CIO is that the CIO has some control over his or her life. I can see why being called on to outsource your own work would be stressful; you're being forced to give up what control you now have. But let's not feel too sorry for the in-house IT workers. Those they are outsourcing work to are IT workers too. At least the in-house people have the security of old-fashioned jobs.

A: The point of the article isn't to feel sorry for the IT

Have a Leadership Question?

For more reader questions and answers from Susan Cramm, go online to www.cio.com/leadership/executivecoach.html.

CIO.COM

workers; it's to remind leaders of their responsibility to give people a sense of optimism for the future and an understanding

of what they need to do to play a part in it. By imparting this information, they help people take back control of their work, and reduce the stress in their lives.

Susan Cramm is founder and president of Valuedance, an executive coaching firm in San Clemente, Calif. You can e-mail feedback to susan@valuedance.com.



End-to-end
IP solutions and
the expertise
to manage them.

that works  



Verizon Business offers a full range of managed network solutions, from simple network monitoring to complete outsourcing. It all comes with versatile experts who are accountable for making it all work for you.

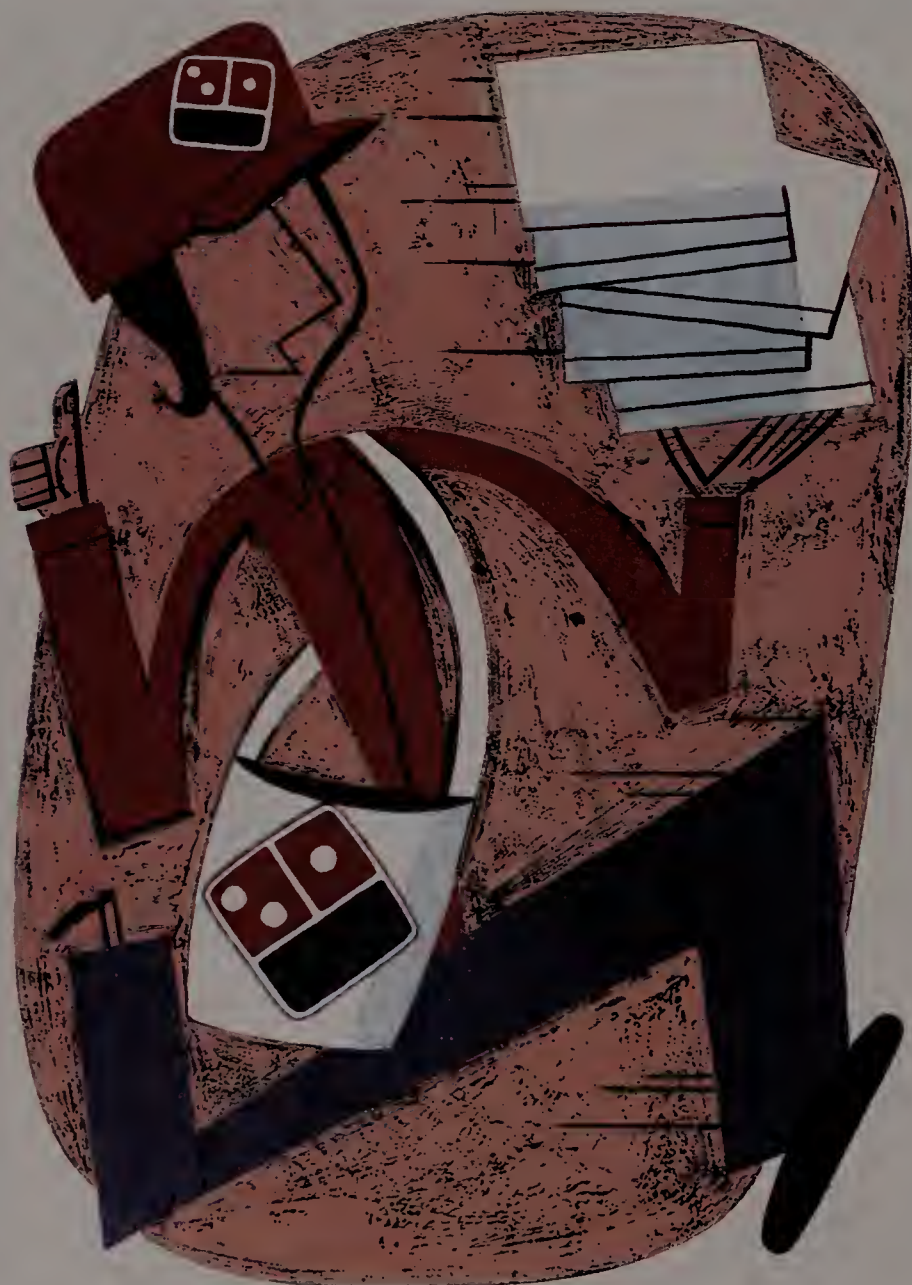
Global capability with personal accountability. **verizonbusiness.com**


verizonbusiness

We never stop working for you.

How to Find Your Competitive Advantage

If a product or process allows you to differentiate from your competitors, it's "core."
For Domino's Pizza, delivery is core.



As global competition invades more and more markets, established companies are fighting tougher and tougher battles against commoditization. Whether their niche is business-process outsourcing, consumer electronics or air travel, management teams are asking themselves: How can our company continue to differentiate itself from our competitors?

The short answer is, either with customer service or radically lower cost. In today's economy, both paths demand innovating with IT systems in ways the competition will find difficult to copy.

Despite the seeming obviousness of this idea, however, relatively few companies are making it happen. There is a persistent problem in the relationship between the IT department and the rest of the corporation that blocks the effective use of IT capabilities when it comes to differentiating core products and services. Allow me to suggest an approach to breaking through this barrier.

The challenge, in essence, is to align IT investment with business priorities. The problem is that businesses are remarkably foggy on what their priorities are. Ask any consultant. When consultants interview the executive team individually and ask each person what the corporation's overall strategy is, they receive many thoughtful answers. Unfortunately, these answers rarely converge. The dirty secret is that most corporations do not have a unified corporate strategy. So, in effect, we are asking IT to align with something that does not exist, and we should not be surprised when the results are poor.

Obviously, the long-term fix for this is to align the corpo-

Continued on Page 38

CHANGE = STABILITY

If there's one constant in business today, it's change. But large or small, internal or external, change doesn't have to impede IT service delivery. Think of change as an opportunity for IT to satisfy fluctuating demand while maintaining a stable, productive work environment. With integrated CA software solutions for service management and service availability, you can unify and simplify the way you manage complex IT services across the enterprise. Anticipate and prioritize shifting demand. Automate processes to ensure timely delivery and reliability of service. And leverage industry best practices such as ITIL. It's all possible with our unique approach to managing technology called Enterprise IT Management (EITM). To learn more about how CA solutions can stabilize change to create a true service-driven IT environment, visit ca.com/deliver.



CASE STUDY SOA IN ACTION

Ensuring the Competitive Edge

Transamerica Life Insurance Company
Simplifies Infrastructure with Sun Software

THERE ARE MANY forces reshaping the insurance industry today. Among them:

- Deregulation of the financial services market
- Increasing market consolidation and product commoditization
- The introduction of Internet technology for supporting agent and customer interactions

Because of these forces, insurance company leaders find their legacy information systems are being strained and proving unequal to the task of remaining responsive to the changing competitive environment.

In order to increase their competitive edge, financial service providers like Transamerica Life Insurance Company, a member of the AEGON Group, have had to move quickly to streamline their technology infrastructures to lower operating costs while improving the quality of customer and agent service.

For Transamerica, one key solution has been process-driven integration and automation via the Sun Java Composite Application Platform Suite (CAPS, which includes the former See-Beyond ICAN Suite). To help Transamerica automate business processes and enable self-service for both agents and customers, CAPS:

- Supports the expansion and optimization of its distribution channels
- Lowers processing costs per transaction and customer



"The Sun CAPS solution was the only platform we felt gave us the flexibility we needed with the total cost of ownership we felt we could support."

—Gwen Kluber,
CIO, Financial Markets Group (FMG), a division of Transamerica Life Insurance Company

- Creates market differentiation and brand awareness

- Supports the acquisition of new customers by developing customer-centric solution strategies to improve satisfaction, loyalty and profitability

"Developing a responsive technology infrastructure is becoming increasingly critical to the success of our business units," says Gwen Kluber, CIO, Financial Markets Group (FMG), a division of Transamerica Life Insurance Company. "As new programs are developed at the local business unit level and considered for roll-out across the organization, we require systems that allow us to evolve quickly and effectively with a minimum of disruption for our agents."

CAPS was developed to leverage existing investments in technology while providing competitive advantage through increased flexibility and responsiveness. This flexibility provides the foundation to create a set of services above existing underlying legacy and packaged applications, using a service-oriented architecture (SOA).

With an SOA, companies such as Transamerica can leverage CAPS' business process management (BPM) capabilities to orchestrate common services across multiple channels and products. These multi-channel/multi-product applications can be updated from a change made at a single point, and new services need only be developed once for use across all channels.

In short, CAPS helps enterprises such as Transamerica to increase customer satisfaction and loyalty by providing a positive and consistent experience while dramatically reducing time and cost to launch new services.

"The Sun CAPS solution was the only platform we felt gave us the flexibility we needed with the total cost of ownership we felt we could support," Kluber says. "And its commitment to partnership and to our success was clear throughout the entire selection process."

ABOUT SUN JAVA COMPOSITE APPLICATION PERFORMANCE SUITE

Sun recently announced a new release of their product line which delivers an integrated suite that includes Sun platform software products and the former SeeBeyond ICAN Suite. This product, Sun Java Composite Application Platform Suite (CAPS), delivers everything an enterprise needs for SOA, composite applications, and enterprise integration projects. CAPS is made up of industry-leading products from both companies, such as: a service oriented development environment, portal server, application server, directory server, access management, and integration servers. CAPS has nearly 2,000 customers across all major industries worldwide, a sampling of which includes Blue Cross Blue Shield of Massachusetts, BHP Billiton, The Cleveland Clinic, The Dial Corporation, DuPont, Florida Power & Light, Fluor Daniel, Fujitsu, General Motors, Halliburton, Hertz Corporation, Lockheed Martin, Pfizer, Samsung, Sprint, and Sutter Health.

Sun SOA Solution at a Glance

THE COMPANY: Transamerica Life Insurance Company, a member of the AEGON Group -- one of the world's largest listed insurance groups, employing over 25,000 people worldwide and operating through locally managed units.

THE BUSINESS CHALLENGES: *In responding to the changing landscape of the insurance industry, Transamerica sought a new technology infrastructure solution to help:*

- ➔ Attract and retain customers in a competitive environment
- ➔ Provide consistent access to multiple products across multiple channels
- ➔ Meet customer demands for real-time information
- ➔ Reduce cost of launching new products and channels

THE SOLUTION: *The Sun Java Composite Application Platform Suite (CAPS) is designed to include:*

- ➔ Service-oriented access to legacy systems
- ➔ Business logic implemented as a set of shared services
- ➔ Processes shared across channels
- ➔ Support for a common object model
- ➔ Version control
- ➔ Impact analysis

THE BUSINESS BENEFITS: *Since deploying CAPS, Transamerica has come to realize:*

- ➔ Consistent processes across channels and products
- ➔ Information available in real-time
- ➔ Support for complex, tailored products
- ➔ Superior customer experience
- ➔ Enhanced customer satisfaction and loyalty
- ➔ Reduced development and maintenance costs
- ➔ Strengthened competitive position

For more resources on SOA, visit www.sun.com/soa



Continued from Page 34

ration around a single strategy. But that's not in IT's power to accomplish. What IT must do instead is determine the pecking order of power among the various competing corporate strategies and align itself with the most powerful first, then the second most powerful and so on. There won't be enough resources to fund everyone's strategy, so it is important to get to the most important ones first. Of course, if you are lucky enough to work for a corporation that does have a unified strategy, you can probably stop right there.

But let's say you are not so lucky. Now what? The first step is to sit down with the executive in charge of the highest-priority operation or P&L and have a heart-to-heart about the following questions:

When you look at our corporation's performance in the marketplace, what companies represent our stiffest competition? (List two or three. Then answer the following questions for each competitor.) 1. What are they so good at? 2. Is our goal to equal or beat them at that? 3. Is there some other thing that we do, or could do, that they in turn would find hard to compete with? 4. Is it our plan to commit significant resources to such an activity?

Once you get those answers, find out how the executive would define: 1. your company's primary competitive differentiator today; 2. its best chance for equal or greater differentiation tomorrow; and 3. the most important business initiatives under way to create that future competitive differentiation.

Stop there. Once you have this input, thank the executive for his time and explain that you would like to think about the IT implications of this strategy and come back with a plan to maximize the value from IT investments going forward. Back in your office, gather your best and brightest around you for the following exercise, which we will call core/context analysis.

Identifying Your Core Functions

In this exercise, something is core if, and only if, it contributes to the corporation's primary effort to create competitive differentiation. All other activities, by definition, are context. For example, at Southwest Airlines low-cost fares are core, and customer amenities are context. Conversely, at United Air Lines customer amenities are core, and low-cost fares are context. At Domino's Pizza, customer delivery is core; at Pizza Hut, it's context. At Volvo, safety is core; at Ford it is context.

Now many context activities are extremely important, even if they are not differentiating. So to make sure we register this dimension as well, we also ask whether a given activity is mission-critical. Mission-critical activities may be core or context; their key feature is that falling short in their execution has severe negative consequences. For example, not losing customers' luggage is a mission-critical task for all airlines, but core to none. Same goes for building a safe car; at Ford, hybrid fuel economy may be core, but the consequences of unsafe vehicles are totally unacceptable.

In light of this model, the most important processes to support are those that are both core and mission-critical. Even here, there is a subtlety that can be lost. Often, the goal of minimizing mission-critical risk can be at odds with increasing competitive differentiation. For example, suppose you could ship an ugly iPod by Christmas but would risk missing the holiday sales window to make a beautiful one. It is crucial that differentiation be given the priority. That is, if style is core (and at Apple it surely is) then one cannot sacrifice it, despite the risk. The reason is simple: Without competitive differentiation, the entire corporate strategy is bankrupt.

This doesn't mean you can abrogate your responsibility to

Creating new core in pilots is incredibly strategic. Yet it often gets short shrift in IT resources.

manage mission-critical risk, only that you must go out of your way to make sure it does not interfere with creating core processes. IT can help you create new core initiatives, but they are not always understood to be strategic at first.

Investing According to Analysis

Creating new core is the domain of pilot projects and skunk works. Typically, the company is still incubating the new capability, not exposing it yet to the marketplace at large, and not expecting significant revenue from it in the short term. That's why it is not yet mission-critical. But it is incredibly strategic, particularly if you can shorten a new product or service's time to market. Here's where IT may be able to make a big difference, whether it is via converged communications and computing systems that speed collaboration, beta customer feedback systems that shorten cycle time, or supply chain management that supports rapid prototyping. But if IT resources are allocated by revenue contribution, then this quadrant will always get short shrift, and the company will lose precious time to market in an act of false economy. (That's why it's so important to allocate resources based on a core/context analysis.)

By contrast, putting IT in service to mission-critical context makes all kinds of sense to everyone involved. If competitive differentiation is not a key goal, then standardization is a great alternative, and nothing imposes standardization better than IT systems. Moreover, once processes have been standardized, they can be reengineered to extract resources either through automation or eventual outsourcing, thereby freeing up those resources to be invested in core activities.

The key here is to recognize that if a process is mission-critical but not core, then there is nothing to gain from differentiating its outputs. Therefore, user requests for nonstandard output need not—indeed, should not—be prioritized because

they are not strategic. For example, users often argue that since the systems are being charged back to their budget, they should be entitled to get what they want for their money. Not so. It is not their money; it is the *company's* money, and they have a fiduciary responsibility to get a good return on it. There is more strategic value in standardizing mission-critical context processes because it frees resources to invest in strategic differentiation elsewhere.

Finally, that leaves processes that are neither core nor mission-critical—facilities management, training seminars, office supplies procurement and the like. These cry out for

Dealing with Darwin

To read an excerpt from *Dealing with Darwin* by Geoffrey Moore, go to the online version of this column at www.cio.com/050106.

outsourcing. Here, IT can make the biggest contribution by preparing the processes for service-level man-

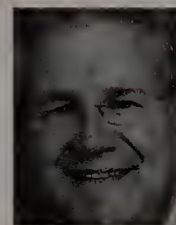
agement. That is, prior to transferring the work to another party, IT can first determine what the standards of acceptable work product are, establish metrics that track to those standards and even pilot those metrics while the work is still in-house. Then when the work is outsourced, the company has a low-touch, high-reliability mechanism for ensuring vendor

performance.

The goal of all this analysis is to fund next-generation innovation by migrating resources from context to core. This not only improves returns but also helps reduce resistance to change, since the resources being transferred are often the very people who would otherwise be obstructing innovation.

The biggest challenge is extracting resources from mission-critical activities. The key to success here is to win the line-of-business executive sponsor's support for standardizing these processes. That can be done if you can demonstrate how IT can redeploy those resources in support of core initiatives. Armed with this analysis, you now can go back to the business executive with a plan designed, first, to accelerate initiatives targeted at competitive differentiation and, second, to manage risk while freeing up resources for next-generation innovations. **CIO**

Geoffrey Moore is the managing partner of TCG Advisors, a consultancy that specializes in business strategy. He is also the author of *Dealing with Darwin* (Penguin, 2006) and can be reached at gmoore@tcg-advisors.com. Please send comments to Executive Editor Alison Bass at abass@cio.com.



IT supports and controls the applications that run the business.

Now there's an application to support and control the business of IT.

Maximo® ITSM, the most comprehensive IT asset and service management solution, substantially improves the business of IT, significantly increasing the value IT brings to an organization. By unifying IT service, asset and work management on a single software platform, Maximo ITSM delivers the control and visibility you need to align IT service levels with your overall business goals. All you need to integrate and automate processes, reduce unplanned outages, standardize and share information and surpass service-level commitments. To make your IT organization more efficient and more valuable, **download** our whitepaper at www.maximoit.com/cio or call 800-326-5765.



COUNTED CONTROLLED MAXIMIZED

mro software
make it all count



“Our infrastructure
is an important
competitive
advantage for us.
It has incredible
reliability and
scalability,
and the cost
per user is
incredibly low.”

—Dave Girouard, general manager,
Google enterprise division

The Enterprise Gets Google^d

Can you imagine an IT environment without applications to roll out? You're going to have to if Google's plan to conquer the enterprise works. BY BEN WORTHEN

ON FEB. 14, 2006, MANY GOOGLE E-MAIL USERS RECEIVED AN UNEXPECTED Valentine's Day present. When they logged in to their accounts, there it was: instant messaging, fully integrated with their e-mail system. Gmail users could now chat in the same browser window as their inbox. Just as with e-mail, the system would save a transcript of every chat and, better yet, the text of archived transcripts would be searchable. There was nothing to download, nothing to install.

It was technology magic.

This was another overnight success for Google, the company most everybody loves (with the exception of a few countries, some municipal governments, and a host of proto-competitors such as Microsoft, IBM and Yahoo). Over the past few years, Google has released a series of Web-based applications that have raised the bar for its competitors, just as its search engine did when it burst onto the scene at the end of 1999. When Gmail debuted on April 1, 2004, for example, it gave users a gigabyte of storage—10 times as much as Yahoo and Microsoft's free e-mail services.

Google releases its products with little fanfare, labeling them beta versions and leaving them that way for years. Yet its desktop search, map, e-mail and other services are among the world's best and most popular applications. And whether you know it or not, your employees are probably using them.

Reader ROI

- ⌘ Google's strategy for taking over enterprise computing
- ⌘ Why moving from the desktop to the Web will improve IT
- ⌘ How Web computing will change the IT governance model



But Google is not just a search company, or an applications company. A company that can scan billions of webpages for a handful of words in less than a second (a search for “CIO magazine” returned almost 28 million results, prioritized by relevance, in 0.14 seconds) deserves to be acknowledged for what it really is: a supercomputer.

“What Google recognized was that if they built their own system using cheap, off-the-shelf PCs and ran their own operating system—the Google File System, a highly customized version of Linux—“they could afford limitless expansion,” says Chris Sherman, executive editor of Searchenginewatch.com. In order to build the best search engine possible, Google connected thousands, then tens of thousands, of servers. And at some point that infrastructure and the possibilities it afforded became the company’s primary focus. What followed was a series of services that took advantage of Google’s ability to

process transactions at a speed and scale never before achieved. And these Web-based services don’t require users to download a thing. Google provides the computing power. All you need is a browser.

“What Google has that’s extraordinary is not search but the highly optimized computing platform,” says Sue Feldman, VP of content technologies research at IDC (a sister company to CIO’s publisher). That platform has Google poised to lead the Web computing revolution that everyone in the IT industry has been talking about since the 1990s.

Google’s platform, along with the others bound to follow in its wake, will, over time, move computing to the Web and away from the desktop. As this happens, IT will get

“We’re still far away from a holistic Web computing solution. But we’re not far from fostering greater productivity with Google’s name on it.”

—BRIAN SHIELD, CIO OF THE WEATHER CHANNEL

better—applications will be easier, faster and cheaper to use—much as it did when it moved off the main-frame 20 years ago. “We’re still far away from a holistic Web computing solution,” says Brian Shield, CIO of The Weather Channel. “But the pieces are not that far away. We’re not far from fostering greater productivity with Google’s name on it.”

The move to online computing will change the relationship between CIOs and users. Just as accessing applications over the Web will give CIOs more flexibility to find the best fit for their businesses, their employees will enjoy that same flexibility in finding the applications that are best for them. In the Google-future, IT will be more scalable, agile and cost-effective. But it will

also be less controllable by CIOs. This will require CIOs to adopt a new mind-set for how they manage the use of IT in their company. Those who succeed will be free to focus on driving innovation; those who fail will be fighting a battle they're destined to lose.

"CIOs need to understand that it is a whole new world," says Feldman.

Inside the Googleplex

Web computing could make a CIO's life much, much easier. Applications will be hosted by third parties that can support an almost unlimited number of users and store almost unlimited amounts of data. CIOs will no longer have to maintain large databases or expensive desktop software. And because these applications live on the Web, your employees will be able to access them with any device that supports a browser.

In this environment, upgrades are easy. Instead of an IT department pushing out a patch to every user, or installing software from a CD onto machines one by one, the application provider updates it once, and everyone gets the new version the next time they log on. That's what Google did when it integrated chat into Gmail. CIOs will no longer have to buy large, packaged applications, like an ERP system, with hundreds of functions they'll never use. Online applications will allow them to pick and choose the services they need. And because there are no legacy investment costs in each service, switching between services—and providers—will be easy. You just point your employees to another website.

Sounds great. So why isn't everyone doing it?

"Building a suitable Web computer is really hard to do right now," says Paul Kedrosky, executive director of the William J. von Liebig Center, a venture capital firm that commercializes technologies developed at the University of California, San Diego. "But it was also really hard to create a single-circuit board. Then it turned into a commodity." Like the circuit board, most experts believe Web computing will also turn into a commodity.

But today, Google is the only company that's got it. (For companies that are close, see "Google's Progeny," Page 46.) And the

You've Been Googled

Your company won't run on the Web tomorrow, but now is a good time to prepare for the day it will

THE SHIFT TO WEB COMPUTING is already happening, even if it may not be noticeable in your workplace. Near ubiquitous high-speed Internet access is giving your company's employees access to Web-based applications at home. Inevitably, they will find and use the applications they like best. Soon CIOs will be faced with a choice, says Dave Girouard, general manager of Google's enterprise division. "The CIO can be the source of the tools, or he can take the hardball approach and try to shut them down."

The thing is, says Girouard, people are going to use them either way.

History bears this out. "A lot of the innovation that ends up in front of CIOs starts off in a user's home," says Paul Kedrosky, executive director of the William J. von Liebig Center, a venture capital firm. "Think back 20 years ago. The rear guard action would have been to make sure that my users aren't buying PCs when I am not looking."

CIOs who don't want to be marching in the rear of change can start taking small steps today. H&R Block CIO Marc West says that CIOs should think twice about every client/server application they install. "If you are a PeopleSoft customer who's going to have to upgrade to Oracle, you should be seriously questioning that investment," says West. "Do you need to keep all that information in one application? Maybe some things don't belong in PeopleSoft."

As Internet-connected devices like PDAs and cell phones become more popular (and IDC research shows that they will soon outnumber PCs), employees will demand access to information through them. And since these devices aren't powerful enough to run client/server applications, it will be up to CIOs to provide Web-based applications for those employees or risk, as Girouard says, "losing their constituencies."

Or, as Sue Feldman, IDC vice president of content strategies research, puts it, "CIOs have to become part of the network."

—B.W.

reason for that is under the hood.

Google started out with two advantages. First, it was a technology greenfield, unencumbered by a legacy architecture. Second, its founders were cash-poor grad students who needed to make their system run with tools they could afford. Google cofounders Sergey Brin and Larry Page taught themselves how to turn cheap, off-the-shelf PCs (which, legend has it, they liberated from the Stanford computer science department's loading dock) into powerful servers. And they connected these servers to one another with Linux, a free operating system that they customized over time to meet their needs.

By 2002, Google's homemade, commodity-based servers outperformed comparable equipment from IBM that cost \$18,000 for 360 gigabytes of storage; Google spent about \$1000 for the same amount.

Google treats its infrastructure as a closely guarded secret. It doesn't allow outsiders into its data centers, so any description of the company's infrastructure is an educated guess. Philipp Lenssen, who runs the Google Blogoscoped website, says that the last semiofficial count of the company's servers was 100,000. Arnold suspects that it is now more than 150,000, spread across 24 data centers—making Google the third largest server manufacturer in the world, according to Arnold. The power per dollar that Google is able to achieve compared with its competitors explains the speed of its Web searches, the 2.5 gigabyte inboxes it gives each Gmail user, and other storage-intensive initiatives, such as Google video, which essentially invites anyone to upload a video to Google's servers.

"Our infrastructure is an important competitive advantage for us," allows Dave

Girouard, general manager of Google's enterprise division. "It has incredible reliability and scalability, and the cost per user is incredibly low."

Behind the Fun and Games

Given the combination of Google's secrecy and its relatively anodyne media image—which the company works hard to foster with its "Do No Evil" corporate motto—it's no surprise that people looking at the company just see a search engine, some snappy consumer applications and no coherent commercial strategy. "But what you see on the surface is just what they choose to show you," says Lenssen. "It's like they are holding a magnet beneath a table. All you see is a metal ball moving around on top. Because

you can't see the magnet, you assume the ball is moving randomly."

Less colorfully put, because Google's strength lies not in the applications it shows the world but in the architecture it doesn't, the company's business strategy is not readily apparent. But according to Lenssen, people who look at Google and see nothing more than random growth are making a big mistake.

Most of the high-tech industry is just starting to realize this. "IBM executives in the early 1980s didn't understand what Microsoft was," says Arnold. "Now Microsoft is in the same spot, and they are trying to understand what Google is. And they're having a hard time."

Arnold, who has spent the past year per-

forming competitive analyses of Google for large technology companies, says, "People don't want to believe things that run counter to their vested interest." Meaning, in this case, a way of computing that is not dependent on the client/server architecture. "They refuse to recognize that a search engine with ads has got something different enough to alter the rules," he says.

But it does.

Google has slipped under the radar as a potential enterprise computing powerhouse because it hasn't tried to compete directly with Microsoft or any of the other big technology vendors. Google could offer an unlimited number of applications on top of its infrastructure. The ones it has

chosen to unveil—search, e-mail, maps, blogging tools, chat—aren't exactly Office. But Google has all the pieces. Gmail contains many of the rich text features, such as font selection, highlighting and alignment, found in Word; the Google search bar can perform the same mathematical functions as Excel; and Picasa, Google's online photo-

editing service, has some of the presentation capability of PowerPoint.

Google hasn't integrated these features into something that approximates a Google Office for one reason: It doesn't want to. Why compete directly with a company that has more than \$30 billion in revenue and a monopoly on the desktop?

But there's another reason: Google isn't designed organizationally or philosophically to compete with Microsoft; it's designed to bypass it. Since its applications live on the Web, they aren't dependent on an operating system the same way desktop applications are.

"Microsoft in the 1980s allowed you to do tasks on a desktop that you could previously only do on a mainframe," says Marc West, CIO of the brokerage firm H&R Block. "They took computer power and moved it to the desktop. The same play is happening here. With the Web, you can self-select applications and piece them together into something you use. That's the difference between an operating system and an operating environment. You move from client/server to client/Web."

"Google cracked the one thing that Microsoft hasn't: They have a Web platform."

—MARC WEST, CIO H&R BLOCK



When it came to their AV installation,



Case Study: Cuyahoga Community College Corporate Center

Cuyahoga Community College could have worked with anyone.

They chose us.



Audio Visual Innovations recently helped Cuyahoga Community College Corporate Center with their new facility, and we can help you, too. Working closely with architects, designers, facilities managers and both IT and construction professionals, AVI designs, builds and installs world-class audiovisual environments for all forms of presentation, communication and collaboration.

From boardrooms, classrooms and courtrooms to auditoriums, healthcare and mission-critical monitoring facilities, AVI's extensive project and client list reflects the breadth and depth of our expertise and experience.

In business since 1979, AVI is America's premier AV system design and integration company, fielding multiple teams of experts that include engineers, project managers, CAD technicians and other construction and audiovisual industry professionals. AVI is a national company. Our size and strength give us unrivaled access to the widest range of products, all the latest technologies, and a level of purchasing power that ensures substantial value for all of our customers.

Whether you're creating a new facility or upgrading an existing one, let Audio Visual Innovations design and install the technology solution that will project the best possible image for your organization. For more information, including additional case studies, please visit our website, www.aviinc.com. To discuss your specific needs with an AVI representative, give us a call at **1-866-634-7265**.



Your Source For Being Seen And Heard.

DESIGN • BUILD • INSTALL

1-866-634-7265 • www.aviinc.com

Google Eyes the Enterprise

Web-based applications have taken off in the consumer world because of the penetration of high-speed Internet access. Just a few years ago, work was the only place where people could use high-bandwidth applications. Today, more than 70 percent of Internet-connected homes have broadband. Furthermore, coffee shops, airports and even entire cities now offer high-speed wireless. Not only do near-ubiquitous connections have implications for how people consume technology, they also have ramifications for the nature of the new workforce.

"The wall between consumer and worker is dropping," says Google's Girouard. "People can work from anywhere. There's a real blurring of the line."

In the office, CIOs control the applications workers use. Usually these are client/server applications that have been chosen because they conform to a set of business requirements and meet the needs of the greatest number of employees. But outside the office, the users are in control, and users will choose whatever applications they feel make them more productive, says Steve Mullaney, VP of worldwide marketing for Bluecoat Systems, an Internet

security company. "And, as a user, I like that my IT department has nothing to do with it," he adds.

The Web applications that your company's employees are using at home are raising their expectations for the applications they use at work. "People are people," says Girouard. "They don't turn into information scientists when they show up at work in the morning." Google believes that people no longer make a distinction between work and home when it comes to their expectations for technology, and its strategy for moving into the enterprise is based in large part on this analysis. "Why, for example, should I have two different calendars?" asks Girouard (one for work and one for home). "There are a lot of opportunities for us there."

Google is getting ready to chase these opportunities. The enterprise division accounts for less than 1 percent of the company's revenue, today, "but over the next five to 10 years, we will become a big part of Google," says Girouard.

John Battelle, publisher of *Federated Media* and author of *The Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed Our Culture*, thinks five to

10 years is a conservative estimate. He points to the Google Pack, a suite of Web and desktop software capable of updating itself that Google released in January 2006, as a sign that Google understands that its future is as a software company.

"I would be stunned if in the next year they did not make a lot of noise in the enterprise space," says Battelle. "It is just too big to ignore."

Googling the Workplace

Today, Google's enterprise division has two products—corporate versions of its search and map tools—and just over 2,500 customers. But the unit has opened support operations in the United Kingdom and Japan, and is growing its support group in California.

"Business intelligence is the place where Google has a foot in the door," says The Weather Channel's Shield. Google's enterprise search application indexes information on a user's desktop, the company's servers and, of course, the entire Internet. CIOs can configure it so that different users have access to different information. Google's enterprise search tool doesn't distinguish between the information on someone's desktop, the company's intranet or the Internet as a whole when it returns results: Information appears in the same browser window regardless of the source. "They are blurring the line between the inside of the company and the Internet," says Shield. "It's preparing you for the Web computing model."

Girouard isn't shy about talking about this. "When a CIO puts in an application," he says, "the user has no other choice." Conversely, Girouard believes that the home scenario, where users choose the applications they want, is a better model, and he thinks it will find its way into the workplace. That's a major shift in the way IT departments operate, but "CIOs need to be OK with some chaos," Girouard says. "They're too concerned with security and locking information down, but those aren't the things that will make a company great for the next 20 years."

"My message is: Think about the innovation engine in your company and what's driving it. What environment are you put-

Google's Progeny

Google may not be the company that ultimately brings Web computing to the enterprise. It could be one of these companies.

Google right now is the biggest Web computing platform out there. But there are smaller companies that have built open-source distributed computing platforms of their own and are using them to offer services targeted to businesses. They include:

» Rearden Commerce

Rearden's portal lets users do everything from buy plane or concert tickets to send packages. It enforces corporate policies when a user is at work (such as no first-class tickets for trips less than eight hours), but lets them decide for themselves when they are wearing their consumer hat.

» Employeease

A Web-based human resources application. The company has direct connections with most payroll and benefit providers. It has 1,000 customers and manages close to 700,000 records.

» Workday

PeopleSoft founder Dave Duffield's latest venture. The not-yet-live company is building out its platform and will offer ERP-like features in an on-demand environment.

» Salesforce.com

The popular CRM tool has 20,000 customers. It runs open source, but doesn't have the distributed platform. Salesforce has had difficulty keeping up with its growth, experiencing increased downtime this year.

Why maintain separate SAN and NAS systems when you can consolidate both.

One system, multiple choices. The Pillar Axiom™ enterprise storage system enables SAN, NAS, or both in a single storage environment — all managed through one powerful user interface. The Pillar Axiom lets you add performance and capacity up to 300 TB per system, without multiple software license fees. And because it's priced lower than what many companies pay just to maintain their storage systems, Pillar is the alternative you've been looking for.

To learn how Pillar is giving customers a better choice for networked storage, schedule a no-obligation half-hour briefing. Call **1-877-252-3706** or visit **www.pillardata.com/both**

Learn the truth about networked storage.



ting in place to make your company a place where people can innovate?"

According to Girouard, some of Google's products that could be configured for businesses in the near future include Gmail, the blogging tool Blogger, Talk (an instant messaging and VoIP service) and Orkut, a social networking tool that helps connect users with similar interests. In fact, Google announced in February that San Jose City College is currently testing a corporate version of Gmail that's hosted by Google but gives the college's network administrators all the controls of an in-house application. More generally, Girouard says, "We let things take root and mature on the consumer side. And where it makes sense, we'll bring something over to the enterprise."

The Naysayers Say Their Nay

It may not be Google that ultimately brings CIOs to the brave new world of end-to-end Web computing. Consumers and businesses have vastly different needs. A consumer application doesn't need to comply with Sarbanes-Oxley or a corporate travel policy. Making an application that can account for these and other business needs takes an understanding of the market it is catering to.

"Google has the platform, but they don't have any expertise," says H&R Block's West. "That's their challenge. The platform allows them to bring more horsepower. Now they need to make something that businesses will buy." West acknowledges that many of Google's consumer products

marketing for Microsoft's MSN, is dismissive of his budding rival. "The golden halo around them doesn't guarantee them success in the software business," he says, Microsoft's indisputable might lending weight to his words. The software giant has not yet decided whether to wage an all-out war with the upstart. If it does, Microsoft has a pretty good track record in these fights. (Raise your hand if you're still using Netscape.) And Microsoft knows it's in a fight. Last year, Bill Gates told *Fortune* magazine: "They are more like us than anyone else we have ever competed with."

High praise.

But unlike Microsoft's previous competitors, Google's applications are not wedded to the Windows operating system, so

"Google is more like us than anyone else we have ever competed with." —Bill Gates, president, Microsoft

At its core, however, Google's enterprise strategy will remain viral. It won't try to convince CIOs to replace the applications they already have with Google versions. Instead, Google will continue to produce products that people like using and will use—at home and at work.

"It will happen without people noticing," says Girouard, prophetically. "People look for a eureka moment but things just seep in. That's what's happening here."

In other words, one of these days you could wake up and find that most of the applications your company uses are provided by Google.

That's a vision bound to keep most CIOs on edge (see "You've Been Googled," Page 43). "It's hard to figure out if they're your best friend or your competition," says Shield. But Girouard doesn't want to alarm anyone. "Legacy applications don't go away overnight," he says. "We aren't telling CIOs to get rid of your mainframes or get rid of your client/server [systems]."

"We want CIOs to think about the new areas that they could be investing in. We will start them down that path."

are better and easier to use than their enterprise counterparts. And if Gmail was able to address the archiving, monitoring and reporting requirements that the Securities and Exchange Commission has for financial services companies, then West would probably buy it. But until that day comes, he has no choice but to stick with his legacy client/server e-mail application.

If Google keeps its consumer focus, it may never acquire the business skills to satisfy customers like West. "Consumers aren't yelling for the kind of protection that businesses require," says IDC's Feldman. But Girouard says that Google created its enterprise division to make its consumer products more appealing to businesses. And, he says, Google is partnering with companies in the corporate space, such as consultancy BearingPoint, which started an enterprise search practice in February that will use Google's technology. In mid-April, Google announced partnerships with enterprise software vendors Oracle, SAS and Salesforce.com to enable real-time search across those companies' applications.

Adam Sohn, director of global consumer

Microsoft cannot use its monopoly there to limit access to Google. "They cracked the one thing that Microsoft has not cracked: They have a Web-capable platform," says West. "Microsoft does not have that."

But even if Microsoft prevails—or if Google simply implodes on its own, done in by growth, internal squabbling or hubris—the model will survive and thrive. Applications are destined to move to the Web. Perhaps not all at once, and maybe not even quickly (after all, companies are still running Cobol applications on mainframes), but Google has demonstrated that the Web computing model is viable.

"Google is a great search engine," says West. But, he says, its real legacy will be that it pioneered a new approach to computing, "combining Web services and cheap hardware to deliver on a massive scale. In the process, they changed the way consumers approach technology."

And that's going to change everything for CIOs. **CIO**

Senior Writer Ben Worthen can be reached at bworthen@cio.com.

Oracle Database 10g

#1 On Windows



Starts at \$149 per user

**Oracle Database 10g—
The World's #1 Database. Now For Small Business.**

ORACLE®

**oracle.com/start
keyword: #1onWindows
or call 1.800.633.0675**

Terms, restrictions and limitations apply. Standard Edition One is available with Named User Plus licensing at \$149 per user with a minimum of five users or \$4995 per processor. Licensing of Oracle Standard Edition One is permitted only on servers that have a maximum capacity of 2 CPUs per server. For more information, visit oracle.com/standardedition

Copyright © 2005, Oracle. All rights reserved. Oracle, JD Edwards and PeopleSoft are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.

Reader ROI

- ⌘ Why reporting to the CFO is a barrier to IT success
- ⌘ Why the federated model of IT governance will dominate
- ⌘ What skills CIOs will be looking for and why they won't find them

The service-fulfillment model for IT is dying. A new philosophy of innovation and productivity is being born. Here's what CIOs need to do to usher in a new age of IT.

BY CHRISTOPHER KOCH

THE postmodern MAN

If there's anything harder than predicting the future,

it's reaching a consensus about it. The trends affecting IT today are easy enough to spot—outsourcing, globalization, increased regulation, increased complexity and never-ending demands from the business for growth and revenue—but it's much more difficult to figure out how all these trends will converge to determine the size, composition and strategy of the IT department over the next few years.

So we read the research—not only our own “State of the CIO” surveys (see www2.cio.com/research for all the data) but also studies by other organizations—and talked to some of the more thoughtful and visionary CIOs we know to come up with a portrait of what we call the Postmodern IT Department.

The executive summary goes like this:

The Postmodern IT Department will be smaller, more distributed and dependent on a tightly integrated supply chain of vendors. It will be in desperate need of multitalented specialists who have in-depth technology knowledge but who can also create new products and capabilities that businesspeople might never have envisioned.

CIOs will need to transform themselves into innovation leaders, not merely infrastructure stewards, and they will have to remake their departments in that image.

IT will need to be a full partner, if not a leader, in business process innovation.

Now let's get granular and see what the Postmodern IT Department will look like and how it will work.

TESTO

1. IT will assume responsibility for business innovation across the company.

IT has spent the better part of 40 years automating business processes. It could do more, but that's not what the business is asking for. "The discussion that the business wants to have today is, How are you going to partner with me to win in the marketplace?" says Shaygan Kheradpir, CIO of telecom giant Verizon. "They see that the world is full of IT innovations that the customer never asked for. When did a customer ever ask for the iPod or Google? Yet once they get them, they can't live without them."

IT can envision what the business can't by combining broadband connectivity, the Internet, software, and even gadgets like cell phones and PDAs into new processes and capabilities that solve the problems of the business and its customers. "IT departments can't be focused simply on making internal customers happy anymore," says Ann Senn, national managing director of strategy and innovation for Deloitte Consulting U.S.



new combinations. SOA could be the fastest-growing enterprise IT strategy in history. It became practical only with the arrival of Web services in 2001; yet by the end of 2004 a Forrester Research survey found that 70 percent of large companies had adopted SOA, with 19 percent saying they are using it for "strategic business transformation"—a promising percentage of the total considering the gaps that remain in Web services standards and the lack of proven, standardized methods for implementing an SOA.

IT's role in process innovation will only increase, say CIOs, because the demand for process innovation among businesspeople is permanent now, thanks to the Total Quality Management and Six Sigma movements of the '80s and '90s. "Process change has become embedded in individual functions and business units, and they have seen the benefits to their bottom lines," says Judith Campbell, CIO of insurance company New York Life. "So they come to IT because they want to know what other parts of the company have done. We've gone from being the engineers of new processes to being the movers of innovation across the company."

This shift from providing services to

technology more than they like processes."

Yet demand for IT people who can innovate shows signs of picking up over the next few years. In a survey of 82 companies that began in 2005 and is continuing, a team of academic researchers at the Society of Information Management (SIM) asked which skills IT leaders thought were most important to keep in-house today. With the exception of system analysis and system design, the top skills were all related to business process or project management. The IT leaders' projections for their internal needs for 2008 were nearly identical—except that business skills got even higher rankings.

2. Finance will no longer control IT.

In the postmodern IT era, CFO control over IT will wither away. In fact, the trend of CIOs reporting to CFOs, which surged following turn-of-the-century hard times, has reversed. In Forrester's 2005 survey of technology influencers, 40 percent of respondents said their CIO reports to the CEO, up from 29 percent in the 2004 survey. Another 38 percent of CIOs reported to the COO or

"The thing is to find expertise. I don't care if an underwriting specialist is in Dayton or Zurich, I just want to be able to access that person's skills from anywhere."

—Andy Maier, CIO, Zurich in North America

"They have to be focused on what's going to deliver value for the enterprise and external customers. It's not about just getting the marketing department to stop yelling at me."

The ongoing shift to service-oriented architecture (SOA) will improve IT's ability to innovate because it requires that IT understand how the business does its work. SOA represents the highest order of business process innovation: a set of tasks (termed services) such as "credit check" or "customer record" that are expressed in technology and can be combined quickly and repeatedly into

innovating new ones is coming in baby steps at New York Life. The number of staff devoted exclusively to process design and innovation is small. There are 10 innovation experts within a total programming staff of 600, which reflects the shortage on Campbell's staff of people with relationship and management skills, as well as a lack of interest in this kind of work among programmers who grew up loving their ones and zeroes. Moving to the innovation group "isn't a natural career path for many people," says Campbell. "They tend to like

president, up from 27 percent in 2004.

"The State of the CIO 2006" survey showed an even higher pull from the corner office: 42 percent of the 545 CIOs surveyed said they report to CEOs, while the number reporting to CFOs dropped to just 23 percent, from 30 percent in 2004. "[Finance's control of IT] is over," says Nextel CIO Dick LeFave. "IT is not just a cost exercise anymore; it's enabling the business."

For New York Life's Campbell, who reports to her CEO, finance's control of IT is more than a barrier; it's a competing inter-

Windows **Vista:** What's It All About?

It's coming.

Windows Vista™ is scheduled to arrive for volume license customers by the end of 2006, and for consumers in January of 2007. Windows Vista promises to deliver a value proposition built on confidence, clarity and connectivity. With new capabilities and unprecedented functionality, Windows Vista has the potential to greatly help business and IT leaders align their technology and business objectives.

The implications of Windows Vista are massive and worldwide, because nearly every business and IT decision-maker will be touched in some way by this new operating system.

Today, users assume an implicit confidence in their operating system. To them, an operating system is like dial tone. They expect it to be there. Windows Vista, however, does more than just show up. It offers cost-effective deployment, enabled by image-based set-up, image creation and editing and servicing tools that Microsoft estimates can help dramatically reduce the cost of deployment and cut down on the number of images system images an IT department needs to manage. Windows Vista also will likely reduce the amount of security-related down time and is expected to be more responsive than Windows XP.

"Computers today are a vital part of our lives, at work and at home," said Chris Jones, Corporate Vice President, Windows® Client Division. "With Windows Vista, your computer will run more reliably and more securely. Today, we use computers to store more and more of our important information – with Windows Vista you can get to your documents, email, pictures, appointments – anything you've



stored – easier and faster than ever before. Increasingly, computers go with us everywhere – and Windows Vista starts faster, connects seamlessly to the network when working remotely and includes the ability to report changes in network connectivity to applications, all in order to provide a more seamless connected experience. It all helps you connect to the people, information and devices you need."

The clarity of Windows Vista makes it easier for users to find, organize and use information. Windows Vista will help users become more productive by giving them the ability to better search for and organize all of the files on their PCs in ways that make sense to them.

Networking is a 24-7 requirement for companies of all sizes, and Windows Vista offers seamless connectivity between people and systems. Individual



Custom Publishing

Advertising Supplement

Microsoft®

Windows Vista:

What's It All About?

contributors and project teams alike can easily collaborate and share data in workgroups or domains, via support for ad hoc and peer-to-peer groups. The ability to broadcast presentations and data while chatting about their content will help make meetings more productive and efficient.

"Bringing people together so they can jointly work on the projects that drive their businesses has been a goal of Microsoft for many years," Jones says. "Working together in real-time environments not only means working productively, but working smarter."

Making the Move Worthwhile

Migrating to Windows Vista represents a major commitment for companies and organizations. In order to facilitate this commitment, an extensive deployment process has been established. It encourages customers to evaluate their business needs, decide how Windows Vista can meet those needs, and assess their current network and desktop configurations, in addition to considering possible hardware and software upgrades. From there, it's a matter of choosing the right tools for deployment and beginning the process. (See "Are You Ready" Checklist, page 3)

Customers will not be alone when they make this move. Microsoft's continued focus on its partner ecosystem ensures that a global network of independent software vendors, systems integrators and other business partners will be educated on Windows Vista and fully prepared to offer migration strategies and support services when the product is available.

For IT organizations that have been charged with doing more with less at a time when capital budgets are still

DEPLOYMENT AND MANAGEMENT

4 keys to Reducing TCO through easier management:

- Reducing Desktop Support Costs
- Simplifying Desktop Configuration Management
- Increasing Automation
- Reducing Update Management Costs

Want to learn more about controlling deployment and management costs with Windows Vista? Go to <http://www.microsoft.com/technet/windowsvista/evaluate/feat/mngfeat.msp#EEAA>

tight, the move to Windows Vista can be a step toward efficiency and innovation. Microsoft has crafted Windows Vista in a way that represents Microsoft's commitment to reducing the total cost of ownership associated with Windows-based computers.

"We recognize the amount of time and resources required for a major operating system migration," says Jones. "Fortunately for Microsoft customers, our experience in this area has enabled us to assemble a worldwide team of business partners who can ease the pain and streamline the process of moving up to Windows Vista.

Customers will further benefit from the wide-ranging set of tools Microsoft is releasing to help them get up and running on Windows Vista. These tools run the gamut — from the Business Desktop Deployment Solution Accelerator to the Application Compatibility Toolkit to the Windows Automated Installation Kit. We believe that the effort involved in the migration will be more than offset by the enhanced working environment and reduced TCO realized by individuals and organizations."

Toward that end, Windows Vista is specifically designed to reduce the cost of desktop support, simplify desktop configuration management, and enable better centralized

SECURITY

Secure Windows Vista: A Four-pronged approach:

- ▶ Fundamentals
- ▶ Threat and Vulnerability Management
- ▶ Identity and Access Control
- ▶ Information Protection

Want to learn more about the Windows Vista security and compliance enhancements? Go to <http://www.microsoft.com/technet/windowsvista/security/default.msp#x>

desktop management—while decreasing the cost of keeping systems updated. In this environment, administrators can automate many common management tasks, leading to scaled-down maintenance requirements and less time required to resolve support issues.

For example, Windows Vista includes built-in diagnostics that automatically detect and diagnose common support problems and then help users resolve the problems themselves. Issues such as failing disks, degraded performance, lack of network connectivity, and failure to shut down properly are among those addressed by Windows Vista.

According to Jones, "It's difficult to fully appreciate Windows Vista until you realize just how much it can do for you automatically. What companies will notice, however, is the reduced costs of desktop management and support. In addition, users will find that being able to solve problems on their own liberates them from depending on administrators who are frequently so busy that it can take them hours to address individual service requests. Now those hours can be filled with productivity instead of down time."

Performance, Productivity and Reliability

Even the finest, most highly functional information technology is destined to fall short if it is not properly mapped to business value. With that simple guideline in mind, the many enhancements embodied in Windows Vista have been designed to dovetail with a wide range of business requirements.

For example, improved and more secure connectivity is critical to more productive corporate communications. This is especially true in the growing number of companies

with virtual workforces that transparently link centralized, mobile and distributed employees. Corporate data is growing exponentially, and Windows Vista not only gives mobile and remote users easy and more secure connectivity to data, but makes even a simple operation such as turning a computer off more efficient. The benefits of mobility are undeniable. In support of this assertion, OMNI Consulting Group claims mobile worker productivity adds roughly five extra hours per week of real output to the mobile enterprise.

"The business value of Windows Vista will be readily apparent to companies and organizations of all sizes," states Jones. "Small and medium businesses and large enterprises all stand to benefit from the many new features we have added. Small business owners will find themselves spending less time on IT problems and more time on core business processes, while customers in larger organizations will find that they can deploy their administrative resources more efficiently."

Faster boot and resume enables users to become productive faster with Windows Vista. Because the OS processes login scripts, startup applications and services in the background, users are able to get more work more quickly. The new Sleep state function combines the speed of Standby mode with the data protection and low power consumption of Hibernate, so startup from Sleep state requires just seconds.

In many cases, Windows Vista is more responsive than Windows XP on the same hardware. New technology can detect deteriorating performance and tune it automatically. SuperFetch™, a new feature in Windows Vista, allows applications and files to load much faster than on Windows XP-based computers. Because it understands the applications customers use the most, SuperFetch preloads them into memory, so the user's system is more responsive when it is first booted or switched to a different user profile. Detailed performance counters help administrators isolate and fix complex performance problems more quickly and easily, saving money and helping users stay productive.

Other reliability and performance features include Built-in Diagnostics and Automatic Recovery.

Security and Compliance

At a time when interior and exterior security threats are top-of-mind for decision-makers, the business value of security is paramount. It's a sad fact of life that robust pro-

"ARE YOU READY"

According to Gartner, it usually takes a company between 12 and 18 months to plan for the deployment of a new operating system. In order to make the most of that time, preparation is paramount. The following "Are You Ready" checklist is intended to provide some guidelines for Windows Vista implementation.

An effective deployment plan typically includes the following:

- ✓ All the details for customizing Windows Vista
- ✓ A schedule for the deployment
- ✓ An assessment of your current configuration (including information about users, organizational structure, network infrastructure, and hardware and software needs).
- ✓ Test and pilot plans
- ✓ A rollout plan

Questions to ask about deployment include:

- ? Are you going to upgrade computers or perform clean installations?
- ? Which installation method is appropriate for you?
- ? Do you plan to install multiple operating systems on individual computers?

Your answers to the preceding questions are largely determined by your business goals and your current configuration. For example, if you plan to install Windows Vista to gain enhancements unavailable to current Windows XP Professional installations, upgrading might be the preferred strategy.

However, if your desktop computers run Windows 95, you must do a clean installation of Windows Vista. Please note that Some PCs that now run Windows 95 will not be able to run Windows Vista. However, be sure to check the minimum hardware requirements for Windows Vista before doing a clean installation on a Windows 95 machine. (<http://www.microsoft.com/technet/windowsvista/evaluate/hardware/vistahardware.msp>). If you have an Active Directory® environment in place, you can use Windows Deployment Services (WDS) to standardize the installations across your desktops, customize and control the installation process, and determine the media on which to distribute the installation.

For more information on deployment, go to "Which decisions to make now so that you're ready for Windows Vista" <http://www.microsoft.com/technet/windowsvista/evaluate/hardware/vistahardware.msp> and <http://www.microsoft.com/technet/windowsvista/evaluate/hardware/entpguid.msp>

tection is required, but as a recent incident involving the theft of two laptops containing personal information on an undisclosed number of Verizon workers makes painfully clear, it is, and now more than ever.

Microsoft is addressing this business-critical area by making fundamental investments in technology to help protect customers. Efforts include both using a security development lifecycle to develop more secure software, and providing technology innovation in the platform to provide layered defense, or defense in depth. Windows Vista includes many security features and improvements designed to better protect client computers from the latest generation of threats, worms, viruses, malware and other malicious software.

The Windows Vista built-in Web browser software, Microsoft Internet Explorer 7, includes many security enhancements that help protect users from phishing and spoofing attacks. New features include Protected Mode Internet Explorer, which helps protect user data and configuration settings from being deleted or changed by malware.

Windows Vista empowers enterprise users with appro-

Windows Vista:

What's It All About?

priate hardware to better protect data on lost or stolen computers via BitLocker™ Drive Encryption. A BitLocker-enabled computer will have its entire Windows volume encrypted, protecting data, files, email, and intellectual property from unauthorized and prying users.

“Security and compliance was an absolutely make-or-break area for Windows Vista,” Jones declares. “There is a struggle going on out there between the good guys who are trying to do the best job they can for their companies, and the bad guys who are dedicated to exploiting the very technology that has empowered them in order to do harm or commit crimes. We have made Windows Vista more vigilant against the whole gamut of security threats.”

Turning to compliance, Windows Vista helps protect business data while keeping companies in line with both internal policies and the ever-growing number of external regulations such as Sarbanes Oxley. Advances in User Account Control improve security while allowing users to maintain their productivity. Auditing, tracking and data management features address the increased focus on traceability and accountability, helping companies to remain compliant with policies and regulations. And the personal firewall built into Windows Vista builds on the functionality that is included with Microsoft Windows XP Service Pack 2. For example, Windows Firewall in Windows Vista will allow administrators to block applications (such as peer-to-peer sharing or instant messaging applications) from contacting or responding to other computers. Windows Vista also features enhanced support for the latest wireless security protocols, including WPA2, helping you avoid connecting to fraudulent wireless networks which seem like legitimate hotspots but, in fact, are not.

“It’s no accident that Windows Vista is so conducive to meeting the stringent demands of corporate governance,” says Jones. “However, even if Microsoft hadn’t planned to make Windows Vista so compliance-compatible, it still would have turned out that way because all these supporting capabilities just make good business sense.”

CONNECTIVITY AND PRODUCTIVITY

Keying in Productivity: Windows Vista Enhancements

- * Information Virtualization
- * Search Folders
- * Ease of Sharing
- * Improved Mobility
- * Desktop Search

To learn more about networking and sharing with Windows Vista, go to <http://www.microsoft.com/technet/windowsvista/network/default.mspx>.

For more information on using Windows Vista to enhance your performance, go to <http://www.microsoft.com/technet/windowsvista/evaluate/keyreas.mspx>.

FOR DEVELOPERS ONLY

A primary goal of the WinFX® API is to make it simple for developers to build a broad variety of applications more quickly than they can today, whether they’re part of a development team in a Global 100 company or in a small ISV. To do this, WinFX delivers:

- * A consistent programming model across all Windows Vista features
- * A single, intuitive, “right way” to do common tasks
- * High-level class libraries that encapsulate common tasks
- * A familiar programming paradigm that builds on existing skills
- * A framework that is “tool-friendly”

More information for developers is available at

<http://msdn.microsoft.com/windowsvista/default.aspx>

Optimizing the IT Infrastructure

Windows Vista is about cutting costs and providing a better return on IT investments, two pillars of business value. Managing desktops can be prohibitively expensive with multiple desktop images to maintain and test. Windows Vista can help reduce image engineering, testing and deployment costs with a single world wide image, which can deliver dramatic savings.

This represents a welcome change for IT departments that currently maintain separate OS images for each language and computer hardware type in their company. The modularized architecture and file-based imaging format in Windows Vista enables a single OS image to be deployed to different types of hardware with different language requirements.

The Windows Vista Value Proposition

Windows Vista promises to provide organizations of all sizes with a new level of confidence in the security, reliability and operational efficiencies of their desktop operating system. It also provides employees with clearly-defined ways to organize and use information while offering seamless connectivity between people and systems.

Conclusion

Windows Vista is coming soon. As a technology, it makes strides toward addressing today’s IT needs: driving innovation and business value through technology. As an enabler of people, it will engender insights that allow employees to make decisions and act on those decisions as never before. Windows Vista means business.

Notes Jones, “We believe that our customers will be really pleased by all the efficiencies that we have built in, and the cost savings that result from them. Microsoft believes that when these efficiencies are combined with the enhanced reliability and security offered by Windows Vista, customers could find themselves working better, faster and more creatively than ever before.” ■

st. "CFOs are either specifically being compensated on how well their deals are going or how much expense they're cutting," she says. "IT has to be making investments, and CFOs aren't rewarded for letting them do that. You can't run IT on a one-year return on investment anymore."

Lee Jones, a former pharmaceutical research and development executive who became CIO of the global pharmaceutical division of Abbott Laboratories, agrees. Having the CFO in charge reinforces the concept that IT is a cost to be controlled," says Jones, who is now president and CEO of Essential Group, a pharmaceutical services company. "CFOs will tend to manage IT as a commodity."

In a postmodern world, IT is definitely not a commodity.

3. IT governance will settle on the federated model and shared services.

After the "dotbomb," companies were rife with recriminations about the quality of governance inside their IT organizations. Ironically, it was uncontrolled demand from the business to build new Internet-enabled infrastructures and business applications that contributed to out-of-control topline costs, not irresponsible IT governance. But that crisis passed. Most companies have since adopted IT investment and prioritization processes that involve key senior business executives. Most CIOs have implemented governance processes for standardizing infrastructure and applications. SOA offers hope for creating an IT infrastructure based on the work of the business rather than applications and functional silos.

IT has long had a plethora of mechanisms for governing itself and the products it offers. There are widely accepted frameworks to guide CIOs in nearly every aspect of their operations, from IT service management (ITIL) to application development (CMMI) to project management (PMP certification). There are also general best practices that have become staples of most IT governance strategies. For example, a recent Forrester survey found that nearly 70 percent of respondents had a formal IT steering committee inside their companies.

Of course, just having committees and

frameworks doesn't necessarily mean that IT will be happily governed. "The concepts are all in place now," says Dow Chemical CIO David Kepler. "There's a road map to follow. But we're still a long way from implementing it all. And while we're doing it, the road map could change."

Yet a general direction for running IT has emerged. CIOs have come to a consensus on the overall organizational model for IT: a mix

of centralized and local services known as the federated model, which is governed centrally by a small headquarters staff that gives varying degrees of autonomy to IT groups allied with different business units, functions or geographies. Driven by the mandate to control costs, most IT organizations have begun sharing use—and cost—of infrastructure, business applications and generic processes supported by IT (such as finance

10 Steps to INNOVATION

It's what the business wants.
Here's how to do it.

- 1. Create a business/IT rotation program.** Businesspeople often don't know what to ask for from IT, and IT people often don't know about business situations where IT could be applied. Move IT people into the business and vice versa and watch innovation bloom.
- 2. Move the focus from technology testing to simulation in a business context.** Systems can work well and still fail because they don't meet a business need. Test your systems in a business context—with real people, data and customers.
- 3. Build an innovation team.** Innovation during the course of projects or daily business is accidental. Make it purposeful by devoting a small group to ongoing pilot projects and meetings with businesspeople.
- 4. Mesh IT development with product development.** Product engineers are often segregated from IT, but with increasing levels of technology built into products, IT people could help speed the development process or even collaborate on new products.
- 5. Look outside the enterprise to partner with others on innovation.** A swarm of small, global companies has moved in to take the place of big, internal corporate R&D departments.
- 6. Squeeze savings out of the infrastructure and dedicate the money to innovation.** A program to constantly reduce fixed costs means there will be more money for innovation...without budget increases.
- 7. Use process improvement methodologies (CMM, ITIL and so on) to decrease innovation cycle time.** Using CMM to standardize and improve software development processes means new projects can be completed more quickly.
- 8. Conduct interviews with all levels of the business.** These discussions don't have to be limited to specific projects. Interviewing businesspeople about what they do, what their problems are and what they'd like to do next is the first step toward innovation.
- 9. Create a joint IT and business capital spending plan.** Many companies consider IT and business spending separately. It's time to merge them. Linking the IT budget to plans to build a new factory could make it a better factory.
- 10. Design contractual requirements for innovation spending and planning with outside vendors.** You devote a portion of your spending to innovation, so why not make business-specific innovation a part of your contracts with your vendors?

—C.K.

SOURCES: Forrester Research, Gartner, CIO reporting

and HR) across the enterprise, while allowing unique resources to remain local. In a recent survey, Forrester found that 67 percent of CIOs' IT investments crossed organizational boundaries, with that percentage expected to stay the same or rise over time for 91 percent of those companies surveyed. Indeed, most of IT's emerging best practices have some element of sharing governance and cost at their core—everything from project management offices to IT governance councils to IT investment and SOA.

Shared services will drive companies to deemphasize the control that independent business units exercise over IT. "The federated model has won," says John Hill, a former CIO at Praxair who is now CTO of IT service provider Siemens Business Services. "Centralized/decentralized is struggling against extremes, which means the pendulum is constantly swinging. Federated lets you balance things in a more delicate fashion."

It will be up to the CIO to manage this delicate balance, being careful not to permit rogue spending or allow standards to slip at the local level, while also demonstrating to their various local constituencies that some of the more centralized governance mechanisms are not robbing them of speed or flexibility. It is literally a full-time job.

4. CIOs will stop identifying with technology.

Gaining credibility as a business strategist requires that CIOs shake an old habit: their self-identification with technology. "You have to be allied with the company first and technology second," says Dow Chemical's Kepler. "You have to be viewed by the CEO as someone who defines success not in terms of technology implementations but in terms of success for the company." That means subsuming a passion for technology to a passion for business. "You have to be seen as being dispassionate about technology," says Kepler. "If you're going to take a risk on building an untested enabling technology, you have to have a great understanding of the business. The high failure rates of new technologies come from missing the connection between the success of the technology and the goals of the company."



"You have to be allied with the company first and technology second."

—David Kepler, CIO, Dow Chemical

The attitude change in the IT department will be no less dramatic. In a 2005 SIM survey of skills that CIOs expect to most value in their IT staffs over the next three years, project management led the list, followed closely by company, functional and industry knowledge. Other skills in demand included business process reengineering, user relations management, negotiation, change management, communication and managing expectations. Only two technical skills (systems analysis and systems design) made the top 15—and both of those skills focus more on architecture and process than on hard-core programming.

CIOs will need all the leadership skills they can muster to manage this shift without driving away their most experienced people.

5. The IT function will fragment, and then it will need to be reorganized.

To some extent, the deconstruction of IT has already occurred, especially in big companies where the large scale of IT and the separation of IT functions such as help

desk, application maintenance and some programming have made them candidates for outsourcing. More and more jobs in IT will become components in a distributed services supply chain modeled on today's distributed manufacturing supply chains.

IT departments already have undergone a structural shift. The number of programmers employed in the United States has dropped by 25 percent since its peak in 2000, even though the total number of IT workers has increased slightly since then, according to the Bureau of Labor Statistics. In our "State of the CIO 2006" survey, 76 percent of respondents said they outsource application development, maintenance or support—more than double the next highest category.

In one respect, the distributed services supply chain model is actually creating more work. As pieces of the IT supply chain break off and become more specialized, the need for coordination of the pieces increases. That means the number of internal jobs dependent upon external people is increasing. This shift is reflected by the new emphasis in IT departments on relationship management and project management.

Economists call these kinds of skills tacit work, which requires the ability to analyze information, grapple with ambiguity and solve problems, often based on experience. Tacit interactions are complex and require interaction (such as managing a software development project) rather than being simple and solitary (fielding help desk calls with a script, for instance).

Tacit jobs have been growing three times faster than employment in the entire national economy, according to consultancy McKinsey, and they make up 70 percent of all U.S. jobs created since 1998 and 41 percent of the total labor market in the United States. These roles track pretty closely with the categories where the Department of Labor says IT employment has made the biggest gains since 2000: application engineers, systems engineers and network analysts.

For CIOs, the challenge will be to design and manage global IT supply chains that link various skill sets (including tacit work) and multiple components of IT work into logical units. "In the future, IT is going to need to be



Aruba's **Mobile Edge** moves with you into the future of wireless

Imagine having your corporate resources move with you everywhere you go. In public places like airports, hotels, coffee shops and cafes, your house, or your partner's offices.

Aruba Wireless Networks can get you there. And we're more secure than your current wired network with our Mobile Edge Architecture and our Identity-based security strategy. We secure people not ports – and in today's world, you need to be secure wherever you are, not just at your desk or in your office!

And our WLAN infrastructure can get your Enterprise going with solutions for Enterprise-wide WLAN, Guest Access, Remote and Branch Office Access, WLAN Intrusion Prevention, and Voice over IP, just to name a few.

Did we mention that we don't require you to disrupt your entire Enterprise wired network to install our Mobile Edge solutions. Or to constantly make expensive upgrades to your wiring closet. We don't (but we know someone who does)!

These are just a few of the reasons why Aruba is The Mobile Edge Company™ – taking your wireless network where it needs to go with a TCO far below competitive solutions.

To find out more about Aruba's Mobile Edge solutions and how to become an Aruba channel or technology partner, please visit **www.arubanetworks.com/partners5**

Aruba's Mobile Edge moves.

See Aruba at Booth 725, Interop Las Vegas at Mandalay Bay.

ARUBA™
The **Mobile Edge** Company

INTEROP **NET**

able to work as a global team to tap into different capability pools to serve the business better," says Andy Maier, CIO of Zurich in North America, which is creating a more global IT function in response to a global business reorganization. "The thing is to find expertise—underwriting, for example—around the world and centralize it along the business value chain rather than according to geography. I don't care if an underwriting specialist is in Dayton or Zurich, I just want to be able to access that person's skills from

anywhere." The glue that Maier is using to link his IT supply chain is common application development processes and tools, along with globally shared repositories.

As Maier suggests, the growth of this supply chain means that fewer employees will be fixed in a particular project or geography. "You may only have a couple of people assigned to a particular project from beginning to end," predicts Diane Morello, research vice president for Gartner. "The rest will come in and out as they are needed,

based on their competencies."

If the supply chain gets gummed up, the CIO and the IT department will be accountable for the entire sticky mess. Rebecca Rhoads, CIO of aerospace and defense contractor Raytheon, says, "You may have a lot of different providers in the model, but at the end of the day you have to make sure the processes and services are reliable and accessible. If there's a break in the chain, you will be responsible. Where the break is and who caused it isn't going to matter much to the business or the user."

In the Postmodern IT Department, Rhoads says, "What's going to make us successful is our ability to manage end-to-end services."

The Unexpected Rise of the "MULTI-SPECIALIST"

While CIOs increasingly demand that their programmers understand the business, they're also asking for a deeper knowledge of new technologies

While everyone agrees that IT needs generalists today, a more accurate term might be *multi-specialists*. Programmers who remain solely programmers will have to be highly specialized and extremely skilled to survive against international competition. Meanwhile, other jobs in IT will require at least a solid grounding in programming, along with a strong specialization in other skills, such as project management and business process (probably both). "You can't say, 'I can manage but I can't do,'" says Verizon CIO Shaygan Kheradpir. Adds Dow Chemical CIO David Kepler, "[Programmers] need to maintain breadth, but they also need depth in one or two areas. Credibility comes from getting results and seeing the broader issues, but sometimes you need to be able to go into the detail. If you can't go into the detail, you won't be able to solve problems."

This helps explain why, in the era of outsourced application development, CIOs who responded to CIO's "State of the CIO" survey (www2.cio.com/research) said the two skills they wanted most in entry-level employees were project management and application development—by an almost equal measure. "My people are becoming more specialized every day because the amount of technology in the infrastructure is growing so fast," says New York Life CIO Judith Campbell.

"A generalist is often said to mean you don't know much about anything," says Peter Lowes, leader of Deloitte Consulting's Outsourcing Advisory Practice. "I think you have to be an incredible specialist in your slice. It is through this specialization that you will have the leadership and focus necessary to remain innovative."

The industrialization and compartmentalization of the IT supply chain for both products and services are driving the need for multi-specialization, he adds. "In the old days, the application designer had to think about every aspect of IT, from the CPU speed to the network to the GUI. As the supply chain develops, you are to a certain degree unburdened from those concerns. You are free to develop specialization in the areas that really matter to the end users." —C.K.

6. IT ROI will become even more difficult to prove.

The increase in the number of tacit jobs in the U.S. economy in the coming years has both good and bad implications for IT. Tacit IT is not about automation—the meat and drink of IT since its inception and the route to easily measured ROI. Tacit IT is all about decision support, knowledge management, business intelligence and artificial intelligence. That's a tough row to hoe for CIOs trying to justify their existence. More and more, businesspeople want information rather than systems, new capabilities rather than automation. In a 2005 survey of IT and business executives, McKinsey found that only 29 percent of business executives believed that automating business processes was the best route to improving operating efficiencies, while 43 percent of IT executives highlighted it. Those numbers speak to a significant disconnect between what business executives want and what IT executives think they want.

But there is, in fact, room for more process automation. According to a survey by consultancy Accenture, fewer than 10 percent of customer interactions and 13 percent of supplier interactions are online. CIOs said they could triple those numbers.

Eventually, however, the shift to tacit work means that opportunities for automation could disappear. And the pressure will be on vendors to make technology think, rather than automate. As the McKinsey

Innovations by InterSystems



Messaging, plus...



Composite Application Development, plus...



Business Process Orchestration, plus...



Business Activity Monitoring

Integrate Your Enterprise. Ensemble Enables EAI, BAM, BPM, SOA, And All That Jazz.

Ensemble is the first product that enables fast integration and rapid development. This unique platform combines the capabilities of an integration server, data server, application server, and portal development software.

What makes this possible is an innovation by InterSystems: We developed Ensemble as a *single* technology stack, not a stitched-together suite of separate components. With a unified environment for integration, development, and management, Ensemble dramatically reduces time-to-solution.

We back these claims with this money-back guarantee: *For up to one year after you purchase Ensemble, if you are unhappy for any reason, we'll refund 100% of your license fee.** We are InterSystems, a global software company with a track record of innovation for more than 25 years.

InterSystems
ENSEMBLE™

Request a FREE proof-of-concept project at www.InterSystems.com/Ensemble12F

* Read about our money-back guarantee at the web page shown above.

© 2006 InterSystems Corporation. All rights reserved. InterSystems Ensemble is a registered trademark of InterSystems Corporation. 3-06 EnsInno12CIOMa



“The concept of providing a secure, stable infrastructure is merely the price of admission today. To survive, you have to be a transformational CIO.”

—Jeffrey Campbell, CIO, BNSF Railway

report states: “Machines can’t recognize uncodified patterns, solve novel problems, or sense emotional responses and react appropriately; that is, they can’t substitute for tacit labor as they did for transactional labor. Instead, machines will have to make tacit employees better at their jobs by complementing and extending their tacit capabilities and activities.”

The good news is that structuring and supporting tacit relationships using technology is still very new and virtually unexplored. For example, McKinsey found that companies in the top quartile of growth in labor productivity between 1998 and 2004 spent \$6,200 per employee on technology for tacit work and \$38,200 for transactional. There’s a lot of room to shift that investment as more transactional work starts going out the door. The bad news is that decision support technology is difficult to build and the results difficult to measure.

7. The entry-level IT job will disappear.

The Postmodern IT Department will be looking for people, but CIOs won’t be able to find them. For Nancy Markle, former president of SIM, the impact of the talent gap will rival that of the technology gap the United States became aware of when the Soviets launched the Sputnik program in the late ’50s. “The technology-rich innovators are going to be the economic leaders of the world,” says Markle. “Other countries are moving ahead because they have government-sponsored programs. We need to have government-sponsored programs

that target every level from elementary school through college.”

In 2005, when SIM researchers asked IT leaders which skills they felt might disappear from their departments by 2008 because those skills would become obsolete, automated or outsourced, the top ranked were: programming (except for “new” programming skills like Java, .Net and Linux), operations, desktop/help, and mainframe/legacy skills—the kinds of skills that used to keep personnel busy hiring entry-level employees.

Yet when the SIM researchers asked IT leaders which background they valued most in entry-level employees, the vast majority chose computer science. And the core of most computer science programs in this country is still programming—precisely the skill that IT leaders told SIM they don’t value anymore.

Not surprisingly, students are reading those tea leaves. The number of kids who are choosing to major in computer science has plummeted by nearly half since its peak of 3.7 percent of freshmen in 2000, according to the Higher Education Research Institute at the Graduate School of Education and Information Studies at UCLA. Just 1.4 percent of all incoming freshmen in 2004 said they would select the major, and the number of women interested in computer science has dropped to its lowest level since the ’70s. Meanwhile, fewer foreign students are choosing to remain in the United States after graduation because job opportunities in their home countries have improved dramatically.

A few schools in the United States have responded by offering combined business and IT curricula. But the kinds of skills CIOs are looking for in their employees—project management, communication, expectations

management—are difficult to teach in the classroom.

Some schools are making internship programs a larger part of their curricula. Kevin Gallagher, assistant professor of management information systems at Florida State University’s College of Business, has increased the number of internships for students in his mixed IT and business program. But Gallagher is limited by the time necessary to set up the internships and by the budgets of local businesses. Indeed, though many CIOs have internship programs, most are for only a few positions—not nearly enough to fill gaps that will arise. “I think the universities and colleges will not produce enough people to keep up with demand, and the same goes in Europe,” says Zurich’s Maier.

8. CIOs will have to step up.

CIOs who faultlessly deliver services of the traditional variety—infrastructure, application portfolio and support—should expect to be under pressure to do more, or soon they can expect to be looking for work. “IT organizations that focus on managing infrastructure and back-office applications may be good candidates for outsourcing,” says Forrester’s Laurie Orlov, VP and research director of the IT Management Team. “Those organizations are thought of as cost centers.”

“The concept of providing a secure, stable infrastructure is merely the price of admission today,” says Jeffrey Campbell, CIO of BNSF Railway. “[To survive], you have to be a transformational CIO.” **CIO**

Executive Editor Christopher Koch can be reached via e-mail at ckoch@cio.com.



CONGRATULATIONS!
YOU JUST ACQUIRED
YOUR LARGEST COMPETITOR.
AND OVER 2,000,000 CUSTOMERS
YOU KNOW NOTHING
ABOUT.

[You Need Data Integration]

How do you begin to get a unified view of your customers when you've just acquired dozens of new systems and millions of customer records? Just call Informatica. With our open, platform-neutral architecture, you can access the broadest possible range of data sources, synchronize your databases, consolidate

your applications—and get a unified view of every single customer, new or old, to help streamline marketing, sales and customer service. That way, you get all the business value out of the business you acquired. And we get another satisfied

customer. Call us at 800-653-3871, or visit www.informatica.com/CIO.

.....
INFORMATICA®
The Data Integration Company™



After ESPN's restructuring, the first leadership challenge for new executive VP of technology **Chuck Pagano** was to meld three separate technology divisions into one.

GAME

ON

As ESPN fast breaks into the digital age, Technology Executive VP Chuck Pagano is calling the plays. To inspire his team, Pagano relies on communication, collaboration and a one-on-one leadership style.

BY THOMAS WAILGUM

ESPN'S CHUCK PAGANO

is not your typically brassy sports executive. His low-key personality belies his status as an industry "playa" who scored a spot on the Sporting News Power 100 list. He loves to mix it up with the troops, rarely utters a sports cliché and refuses to get caught up in the celebrity hype of ESPN's universe. Above all, he says he doesn't take himself too seriously. "Seriously," he emphasizes.

But Pagano—a onetime ESPN technical director who is now executive vice president of technology—will need to draw upon the goodwill and leadership skills accumulated during his nearly three decades there to tackle his biggest challenge yet: fusing the long-separated TV, IT and new media divisions into a single business unit bound by a strategic vision of ESPN's future in the age of digital and high-definition entertainment.

Creating a team where one hasn't existed won't be easy. "We all have our little domains of business expertise. You start to get tunnel vision, and that's what was happening," Pagano says. "I'm pushing everyone toward the same strategic mission."

Reader ROI

- ESPN's leap into all-digital multimedia operations
- The importance of a unified technology department
- Using leadership to manage rapid change

Strategic Leadership

Push is the operative word. ESPN and other broadcast and media companies face increasing market pressure to develop new business models that embrace the emerging digital technologies craved by consumers. At the same time, companies must also figure out how to control and manage their content in an online world that scoffs at intellectual property rights.

ESPN's strategy going forward is simple: Give 'em what they want, when they want and how they want. "More than anybody else, ESPN has been really aggressive with using new ways to get to consumers through new channels, with a combination of traditional and digital media," says Adi Kishore, the Yankee Group's director of media and entertainment strategies.

How the company will continue to do that, Pagano says, is by taking first-mover risks to deliver content across all mediums and by investing in leading-edge technologies such as video-on-demand to get it there. "This is our priority: to serve the fan any way we can, through any pipe, any device, in whatever way they want to consume us, embrace us, fondle us and blow in our ear," Pagano says. "We don't wait for the trends to be developed."

Pagano's strategy hinges on transforming ESPN from a massive collector of videotape into a nimble data center that quickly disseminates multimedia sports content over IP and broadband networks to PCs, mobile phones and iPods. At the heart of that strategy is ESPN's Digital Center, a technically sophisticated TV production facility that is the springboard for the leap into all-digital multimedia operations.

How well Pagano can lead that transformation during the next several years—and whether his team can capitalize on the power of the Digital Center—remains to be seen. But there is some evidence that his single-minded vision for 2006 and beyond has started to permeate the organization. "Our goal is to be the interactive center of the sportsman's universe," says Aaron LaBerge, VP of technology for ESPN.com, who reports to Pagano. "Technology plays a key part in us doing that, and the more transparent that we make it [to the consumer], the better."

A MANDATE FOR GROWTH

A twentysomething Pagano was among the original 35 staffers of Entertainment Sports Programming Network—known today as ESPN—when it launched the nightly *SportsCenter* newscast at 7 p.m. on Sept. 7, 1979. As cable TV's popularity grew during the '80s, so did Bristol, Conn.-based ESPN. It signed licensing deals with the National Football League, Major League Baseball and the NCAA, among others. The company became so attractive in 1984 that television network

"I've got to bring technology to the next bar in this organization and distribute it across all the platforms that we serve."
—Chuck Pagano, ESPN

ABC bought it for a reported \$227 million.

ESPN expanded its brand through the '90s by launching ESPN Radio, ESPN2, ESPN.com, ESPNNews, *ESPN The Magazine*, a restaurant chain and international editions of its products. In 1996, the Walt Disney Co. purchased ABC (now called Capital Cities/ABC) and all of its properties, including ESPN, for \$19 billion.

Disney has always let ESPN be ESPN—one reason, many speculate, why the sports network has been so successful. The brand is a force: Its stable of products reached nearly 68 percent of Americans in the fourth quarter of 2005. U.S. male sports fans spend, on average, two hours a day with ESPN. To top it off, ESPN knows of about 25 kids named "ESPN."

But last fall, Disney's new president and CEO, Robert Iger, went public with his plans for the Magic Kingdom and its subsidiaries, including ESPN, calling for substantial investments in innovative content delivery mechanisms across all its brands by applying new technologies. "Distribution methods and new, more sophisticated consumer electronics devices are multiplying, offering consumers far more flexibility, customization and control



over how, when and where they consume content," Iger told analysts last November.

Iger also promised that ESPN would deliver double-digit annual profit growth to Disney's coffers through 2009. ESPN's financials remain private, grouped with other cable entities on Disney's annual report, but Rider Research pegs its annual revenue at around \$5 billion, about 15 percent of Disney's revenue, with operating earnings of nearly \$2 billion. Disney's mandate for growth came as ESPN was busy spending tons of money: In 2005 it spent \$8.8 billion for the broadcast rights to *Monday Night Football* for the next eight years, \$2.4 billion for MLB games, and reportedly \$2.1 billion for Nascar events.

Iger took the reins at Disney in October 2005. Later that month ESPN President George Bodenheimer announced a restructuring of business functions into six areas: content, sales and marketing, international, finance, administration and technology. In an e-mail, Bodenheimer says the reorganization was caused by the departure of some senior ESPN managers; these departures provided a "clean slate" opportunity to simplify ESPN's structure, which "does mirror the growth priorities set by [Iger] for the Walt Disney Co.—creative content, technology and international expansion."

Pagano says the reorg also mended long-standing departmental disconnects. "Before, there was no reason for [the different departments] to be together," Pagano says. "Now, it's a symbiotic relationship between content and technology. That's the way the world is going."

To lead the new technology division, Bodenheimer tapped Pagano, then senior VP of engineering and technology. The two men have known each other since ESPN's early days, when they watched hockey games together into the wee hours of the morning. "Chuck really embodies all the qualities of ESPN's culture and success—to think creatively and be willing to go in new directions," Bodenheimer says. "He empowers his people to lead and to serve up new ideas."

To keep focused, Pagano carries a card with ESPN's five priorities for 2006: Take personal responsibility to achieve excellent communication and cooperation between individuals and across departments. Enhance ESPN2 to grow ratings and profits. Successfully launch and establish Mobile ESPN. Increase the value of the integrated ESPN and ABC Sports assets to advertisers. Grow ESPN.com, and fast-track broadband initiatives.

Pagano has his work cut out for him.

FROM INTROVERTED ENGINEER TO EXTROVERTED EXECUTIVE

Plenty of friends and relatives back in 1979 tried to talk Pagano out of leaving his technician's job with Hartford's WFSB-TV to work at that startup sports channel in Bristol. "You're going to fail," Pagano recalls them saying. Watching him work the ESPN cafeteria in 2006, it's obvious he made the right choice. Asked if he knows everyone's name, he smiles: "Just about."

Pagano refined his people skills and his reputation as both a hands-on TV engineer and manager at ESPN as he climbed the

KEY DATES IN ESPN'S HISTORY

SEPT. 1979	ESPN launches at 7 p.m. EST
APRIL 1983	ESPN begins distributing programming internationally
APRIL 1984	ABC completes purchase of ESPN from Getty Oil for a reported \$227 million
JAN. 1992	ESPN Radio launches
OCT. 1993	ESPN2 debuts
APRIL 1995	ESPNET SportsZone (now ESPN.com) launches
FEB. 1996	The Walt Disney Co. completes acquisition of Capital Cities/ABC (which owns ESPN) for \$19 billion
NOV. 1996	ESPNNews, a 24-hour sports news network, launches
MARCH 1998	ESPN The Magazine launches
JULY 1998	First ESPN Zone restaurant opens in Baltimore
JAN. 2002	ESPN reaches agreement for multimedia NBA coverage, becoming the first network to televise all four major U.S. professional sports leagues (NFL, NHL, MLB, NBA)
MARCH 2003	ESPN HD, a high-definition simulcast service of ESPN, launches
JUNE 2004	ESPN's state-of-the-art Digital Center opens
MARCH 2005	ESPNU, a 24-hour network devoted to college sports, debuts
JUNE 2005	ESPN becomes the first network in cable television history to pass the 90 million subscriber mark in the United States
OCT. 2005	ESPN announces a reorganization of its business units; Chuck Pagano is promoted to executive VP of technology and is charged with uniting television, IT and online operations
FEB. 2006	ESPN Mobile launches

SOURCE: ESPN

ladder from technical director to systems engineering and project development roles. He listened to and learned from his bosses, noting their people-first management styles. Pagano consciously made the transition from introverted engineer to extroverted executive, becoming more of a “feeling and sensing” person and leader, he says. “My leadership is based on transformation and collaboration, and that started years ago,” Pagano says.

In his latest role as executive vice president of technology, he sees himself first as a cultural ambassador. “I’m bringing [together] three disparate areas that really had no cohesion before,” says Pagano of the IT, TV and new media groups. “They’re all doing great jobs in their separate areas, but I’ve got to bring technology to the next bar in this organization and distribute it across all the platforms that we serve.”

One of the ways Pagano does that is by holding three-hour meetings every other Monday with his department heads. There he shares business strategy, encourages brainstorming and challenges the team to address cross-departmental problems. “We’ve never had a single governance [before],” says Paul Cushing, who was named senior vice president of IT during the restructuring and reports to Pagano. Now, “we look at technology overall. What our priorities are for the company are all in one bucket. In the past, it was all dealt with individually.”

Pagano is also a devout follower of “managing by walking around.” E-mails and formal meetings aren’t his preferred ways of interacting. “I get crazy with e-mail. I fundamentally hate it,” he says. So he sets time aside at least three days a week to visit with staff, asking questions and delving into what they are thinking and talking about. “That’s the only way I learn,” he says.

Pagano also loves to speculate with his staff about the future and what ESPN will look like in two, five and 10 years. “We don’t do

strategic planning; we do more scenario planning,” he says. “What is going to be the next component of TV? There’s such a long lead effort, and all sorts of thing can happen in the meantime.”

A more immediate concern for Pagano, however, is to remedy the business-IT disconnect within the company, which traditionally put TV operations first and relegated IT to a support role. ESPN’s foray into mobile phone service illustrates the challenge.

Launched on Super Bowl Sunday, Mobile ESPN delivers real-time scores, stats and video highlights to phones sporting its brand. However, ESPN doesn’t operate its own wireless networks. Acting as a mobile virtual network operator, or MVNO, it purchases minutes from a mobile phone operator (ESPN uses Sprint). It’s an intriguing business that’s gaining traction, but one with huge financial and technological investments. Although Mobile ESPN required a year and a half of high-level strategizing, IT came late to the initiative. “We got brought into it after Mobile was a done deal,” says Cushing.

Initially, much of the back-end technology for Mobile ESPN was going to be outsourced, according to Cushing. But when IT was finally brought into the loop, the group was, in fact, able to deliver backup infrastructure and other services to the Mobile ESPN team, rather than having to outsource them. If IT were involved earlier in all of ESPN’s decision making, Cushing says, the department “could have a better impact.”

Pagano is keenly aware of this fact. His strategy to make the IT department more visible going forward rests on his ability to ensure that IT has a seat at the table and to keep it in lockstep with the business to drive products to consumers. His relationship with Bodenheimer has helped him champion IT as a strategic partner for the business, a point not lost on Cushing. “It gives us a chance to see what’s happening at the visionary stage as opposed to being reactionary, and it brings us closer to the business,” says Cushing. “It’s not an us-and-them anymore.”

The importance of a unified technology department is also not lost on Bodenheimer. “At various points in our history, there have been waves of technology,” Bodenheimer says. “We are riding an amazing, fast-to-shore wave right now. Technology is of utmost importance. Chuck and his team play a more critical role than ever.”



**“WE SELECTED A
STANDARD FOR
WHICH THERE WAS
ABSOLUTELY NO
EQUIPMENT
AVAILABLE.
THAT WAS A
TOTAL RISK.”**

**—CHUCK PAGANO, EXECUTIVE
VP OF TECHNOLOGY, ESPN**

A BET ON THE FUTURE

Pagano’s catalyst for change lies behind the shimmering facade of ESPN’s Digital Center. Inside, ESPN production staffers are busy editing video clips and graphics via file servers with more than 200 terabytes of storage and retrieval capability. More than 7 million feet of cable snake through the building, which came online in 2004. In addition to digital HD workstations and production facilities, the building houses three HDTV studios that are home to ESPN’s studio shows, including *SportsCenter*.

Back in 2001, Pagano, then senior VP of engineering and technology, made a multimillion-dollar bet that the emerging 720 Progressive standard for high-definition TV would still be relevant by the time the Digital Center was completed. No one knew if the standard could scale to ESPN’s needs or if the equipment and tools would be available as the project progressed. “We selected a stan-

THE ESSENTIAL ELEMENTS OF IT GOVERNANCE



Even the most effective strategy and leadership need the right data to support them. Compuware Changepoint provides the fundamental components for better decision-making. While Changepoint automates key organizational processes, you get an integrated dashboard view of IT costs, effort and value with the power to drill down for details. Hard facts delivered on demand—now that's putting true IT insight in the palm of your hand.



Discover the "Total Economic Impact" of implementing IT Governance. Download the latest Compuware-commissioned case study conducted by Forrester Consulting at www.compuware.com/Changepoint/ROI3. Or, visit us at <http://www.compuware.com/it-governance/>.

ESPN'S SUCCESS DEPENDS ON HOW MUCH IT CAN LEVERAGE PAGANO'S HDTV BET AND CAPITALIZE ON THE DIGITAL CENTER'S TECHNOLOGY.

dard [for which] there was absolutely no equipment available," Pagano says of the Digital Center. "That was a total risk." The 720 Standard (as well as the 1080i) did become one of the two main standards for HDTV, and to some degree, analysts say, ESPN's embrace of HDTV has helped spur its growth.

ESPN's success in the digital world now depends on how much it can leverage Pagano's HDTV bet and capitalize on the center's technology to manipulate, repurpose and dispense content digitally over various mediums. "The Holy Grail for TV facilities has always been reuse," says Bill Lamb, ESPN's VP of systems engineering and electronic maintenance. "You make it once and you reuse it as many times as effective."

ESPN is already getting some payback here. Lamb says staffers using the new digital workstations have shaved an hour off producing a highlight package for *SportsCenter*. It's hard to get them to go back to the videotape environment once they've tasted life in the Digital Center, he says. But despite the jump to digital, ESPN is still using videotape. Production staffers need access to old clips recorded on the network's more than 1.3 million tapes. Dependency on tape will lessen as more ESPN programs are recorded digitally and more of the 150 programs that flow into ESPN each day from other broadcasters arrive in a digital format.

The center's ability to provide unlimited access and easy reuse of content is also enabling emerging business models that were not possible before at ESPN, such as Mobile ESPN as well as ESPN360 and ESPN Motion—video-on-demand products consumers get through ESPN.com. This allows the swift delivery of on-air content through other mediums. "We now have the flexibility to manipulate our content in a way that makes sense, whether it's for an iPod screen or a cellular phone or the connecting game console on your television," says ESPN.com's LaBerge.

But the transition from analog to digital remains a challenge. "We're inventing new concepts as we go," says Pagano, who knows first-hand that tapping into new technolo-

gies is not without risk. Early in his engineering career at ESPN, Pagano specified and developed a videotape playback device that could play commercials back in an automated sequence. That device ended up not working with ESPN's existing equipment and was deemed a total blunder. The lesson for Pagano?

"You have to allow people to try different things and learn from their mistakes," he says. "And you have to be there to help them take the heat [when things go wrong]."

DEALING WITH THE TECHNOLOGICAL STORM

Like other content providers, ESPN is hammering out intellectual property issues using digital rights management, or DRM—technology tools that define distribution and control consumer access to digital content, such as video clips, music and movies. "The good news is that nobody knows what they're doing. The bad news is that nobody knows what they're doing," says Vamsi Sistla, director of broadband and digital home media at ABI Research.

The trick is balancing wide, multichannel distribution of content with intellectual property controls that prevent some type of Napster nightmare. "On the Internet, most of the media formats are still in their early stages of development," says Sistla. "There are no established structure, rules and regulations for rights management, Internet browsers, operating systems and device capabilities."

Different devices support different DRM standards—creating a costly and confusing proposition for content providers. "As people move their media from the PC to other devices, such as handhelds and video players, you have to support multiple DRMs," says LaBerge. "You have to commit to one or the other, otherwise your content won't play." He says which DRMs ESPN will support are a work in progress: "It is something that we are in the process of figuring out."

However, where intellectual property and content are concerned, ESPN's strategy is clear: "We don't believe everything on the Internet wants to be free. You can't necessarily give it all away," LaBerge says. "We believe it's a mix."

That mix is evident in ESPN.com's Insider offering—a paid content model that provides access to premium material that fans can't get elsewhere, such as some of Peter Gammons' baseball commentary and ESPN's NFL draft analysis. It seems to be working. LaBerge says the top metric used to gauge Insider's success is total sign-ups, which has shown steady growth. But ESPN, like others, is still tweaking the pay-for-content model online. Last year it did an about-face and stopped charging for online fantasy football.

As Pagano walks through the Digital Center, he feels humbled by what he and his team are striving to accomplish. "I'm awed every time I go in there," he says. But much like the athletes ESPN puts on display every day, Pagano refuses to admit to feeling the pressure of the big game. "I sleep perfect at night," he says. "The pressure is good. It makes you good." **CIO**

Take the Tour

For a **VIDEO TOUR** of ESPN's Digital Center, go to www.cio.com/050106.

CIO.COM

Senior Writer Thomas Wailgum can be reached at twailgum@cio.com.

EMC²
where information lives®



When information
comes together,
everyone pulls in
the same direction.



Information lives at companies that know how to leverage their intellectual capital. EMC® Documentum® content management software provides the industry's premier platform for capturing, securing, managing, and accessing information. Which helps companies improve productivity, mitigate risk, realize new revenue, and lower costs more than with any other provider. To find out how the leader in content management can help you do the same, visit software.EMC.com.

EMC | documentum

EMC, EMC Documentum, and where information lives are registered trademarks of EMC Corporation. © Copyright 2006 EMC Corporation. All rights reserved.

How to Keep the Web from Becoming a



Ken Jeanos, director of inside sales and operations with Panasonic Industrial, is resisting customer demands to abandon EDI.

Trap

BY MERIDITH LEVINSON

Smart companies are taking their transition from EDI to the Internet slowly—to keep IT costs down and let suppliers' and customers' investments in technology catch up.

KEN JEANOS, director of inside sales and operations with Panasonic Industrial, once believed the Internet would make his company more efficient. The company, a multibillion-dollar division of Matsushita Electric Industrial, distributes electronic components, storage devices and semiconductors, among other products, to original equipment manufacturers and electromechanical subcontractors. Panasonic Industrial had used electronic data interchange—a standard means of exchanging purchasing information—for more than 15 years,

and it worked well for the company. Nevertheless, the Internet promised to streamline some business processes that weren't EDI-enabled and to generally help the company meet customer needs more quickly, at a lower cost.

However, in 2001, just as Jeanos' expectations for the Internet were rising, a handful of Panasonic's customers asked him to stop using EDI altogether and to use their extranets exclusively to exchange purchase orders, invoices and forecasts. Jeanos understood why. According to industry analysts and CIOs, shifting to extranets can allow a company to shut off its EDI networks, and save as much as several hundred thousand dollars a year on fees for value-added networks (VANs), the private net-

Reader ROI

- :: Why suppliers and customers are at odds over EDI
- :: How to hold down the costs of operating multiple B2B e-commerce systems

work providers that lease communication lines for EDI, map data between trading partners and test systems.

But the move to extranets from EDI is not nearly as advantageous for Panasonic Industrial. In fact, extranets are eroding efficiencies Panasonic gained from EDI, because extranets create more manual work for Panasonic employees. "I have people spending all day on one customer, going to their website to confirm purchase orders and post advanced shipment notifications and invoices," Jeanos says, adding that if Panasonic's customers continue to force him to use extranets, he will have to increase his headcount up to 10 percent in the area of customer service.

For example, if a customer requests a forecast from Panasonic, one of Jeanos' demand planners has to go to the customer's extranet to find the information the customer wants in the forecast. The demand planner then has to type that information into Panasonic's ERP system. Once the ERP system creates the forecast, the demand planner has to manually enter the forecast into the customer's extranet. With EDI, that entire process had been automated. Jeanos says integrating Panasonic's ERP system with each of its customers' extranets isn't an option either, due to the expense. Even if integration were financially feasible, some of Panasonic's customers wouldn't allow it because of security concerns.

Like Panasonic Industrial, many manufacturing suppliers feel increasing pressure to abandon EDI, and they're experiencing plenty of pain as a result. The trend has affected the electronics and high-tech industries most acutely, although it has emerged in other industries as well. According to David Sommer, vice president of e-commerce with CompTIA, an electronics industry association, OEMs want to ditch the mixed transaction environments in which they currently operate (where they use some combination of EDI or B2B portals and multiple data formats, including XML and Excel files) and to standardize on one electronic transaction method to save money. Portals have become their system of choice because they are Web-based, and therefore the OEMs think

A STRATEGY FOR THE MID-MARKET

Get the maximum benefit from your e-commerce investment

market position, says Bill Swanton, vice president of research with AMR Research. Nevertheless, he adds, mid-market companies have the most to gain from B2B e-commerce, so they should consider ways to automate as much of their trading as they can.

"Mid-market companies have an opportunity to fundamentally change the operating costs associated with their customer and supplier relationships," says Swanton. The trick is to find an approach to B2B trading that won't burden them with application development. After all, most don't have large staffs, Swanton notes, and the people they have are probably focused on bigger projects, like consolidating their ERP systems.

Swanton sees two options: Companies can build their own B2B trading platforms, or outsource to a trading hub like GSX, SupplyWorks or E2Open. For companies that are building their own platforms, he suggests they stick with technology they already have to minimize development costs. For example, if a company is running Oracle ERP, he recommends implementing Oracle's iSupplier Portal product to share purchase orders, delivery information and payment status with suppliers. A company should also favor a platform that the majority of its trading partners will be able to use, whether that's a portal, EDI or XML.

The other option is to outsource to a vendor that operates a trading hub. These vendors serve as intermediaries between buyers and suppliers, helping to automate transactions for technologically unsophisticated trading partners. They can turn faxes into EDI or XML and vice versa, for example, so that their customers don't have to bother with data translation. In this way, mid-market companies get all the benefits of automated trading without having to do it themselves. —M.L.

they can cajole all their trading partners into using them. Portals also give OEMs "a cheap way to collect data," according to Sommer, because the portal puts the onus for data entry on suppliers. A CompTIA survey on B2B e-commerce last fall found portals are becoming more widely used: 31 percent of respondents said they had done more trading using portals in the previous year than ever before.

But in the process, suppliers are getting squeezed. In the same survey, 77 percent of respondents said trading over the Web provided fewer advantages than other B2B trading mechanisms like EDI. For instance, CompTIA found that manually inputting information from an ERP system into a portal can take as much as 90 minutes while the same process using EDI takes just five minutes. It also increases the possibility of

errors, such as mistyped product numbers and quantities, that don't occur when systems communicate through EDI.

Although standardizing on one trading platform sounds sensible in theory (who wouldn't want to reduce their costs and their technical complexity?), the idea that buyers could force their trading partners to dump EDI strikes some CIOs and e-commerce experts as preposterous. Abandoning EDI "is a giant step backwards," says Ranga Jayaraman, CIO of Hitachi Global Storage Technologies, a \$4.2 billion disk driver maker. "It doesn't make sense," says Steve Phillips, CIO of Avent, an \$11.1 billion electronics manufacturer and distributor. "If you already have EDI set up, the cost of switching is prohibitive."

Not only that, but it could be bad for business. Forcing suppliers to the Web



Deliver targeted rich mobile messages and build customer loyalty.

Get to market faster with next-generation voice and data managed services.

Deliver ringtones, pictures, and games that provide a rich, mobile content experience.

VeriSign intelligent infrastructure at work.

Every day, VeriSign® intelligent infrastructure services enable and protect all kinds of interactions over the world's voice and data networks, helping to drive a dramatic transformation in the way people work, play, and live. That's why today's global carriers, service providers, media companies, and portals are relying on VeriSign to integrate communications, commerce, and content into a single, seamless experience for their customers. **VeriSign. Where it all comes together.™**

www.verisign.com/intelligence
Download the free white paper on intelligent infrastructure services.



could cost buyers in the long run, as suppliers pass their increased costs back up the supply chain, according to Bill Swanton, vice president of research with AMR Research. Furthermore, one platform can't realistically support every trading partner and every business process. "We usually give our clients a shortlist of five different solutions for getting their trading partners onboard electronically, including a portal, file transfer, XML, EDI and Web services," says Benoit Lheureux, a research director in Gartner's architecture and infrastructure group. "That way, they cover their bases and will be a good company to do business with because they're not being myopic."

In other words, for the foreseeable future, most companies will have to operate a hybrid trading environment and

make the best of it. For OEMs, this means resisting the urge to drop EDI because it's so entrenched in the supply chain. For suppliers, it means compromising with customers, perhaps by using third-party B2B integration providers to send and receive information. For both, it means the challenge of finding other ways to control costs by building a system for converting data from one format to another or by outsourcing this work to someone else.

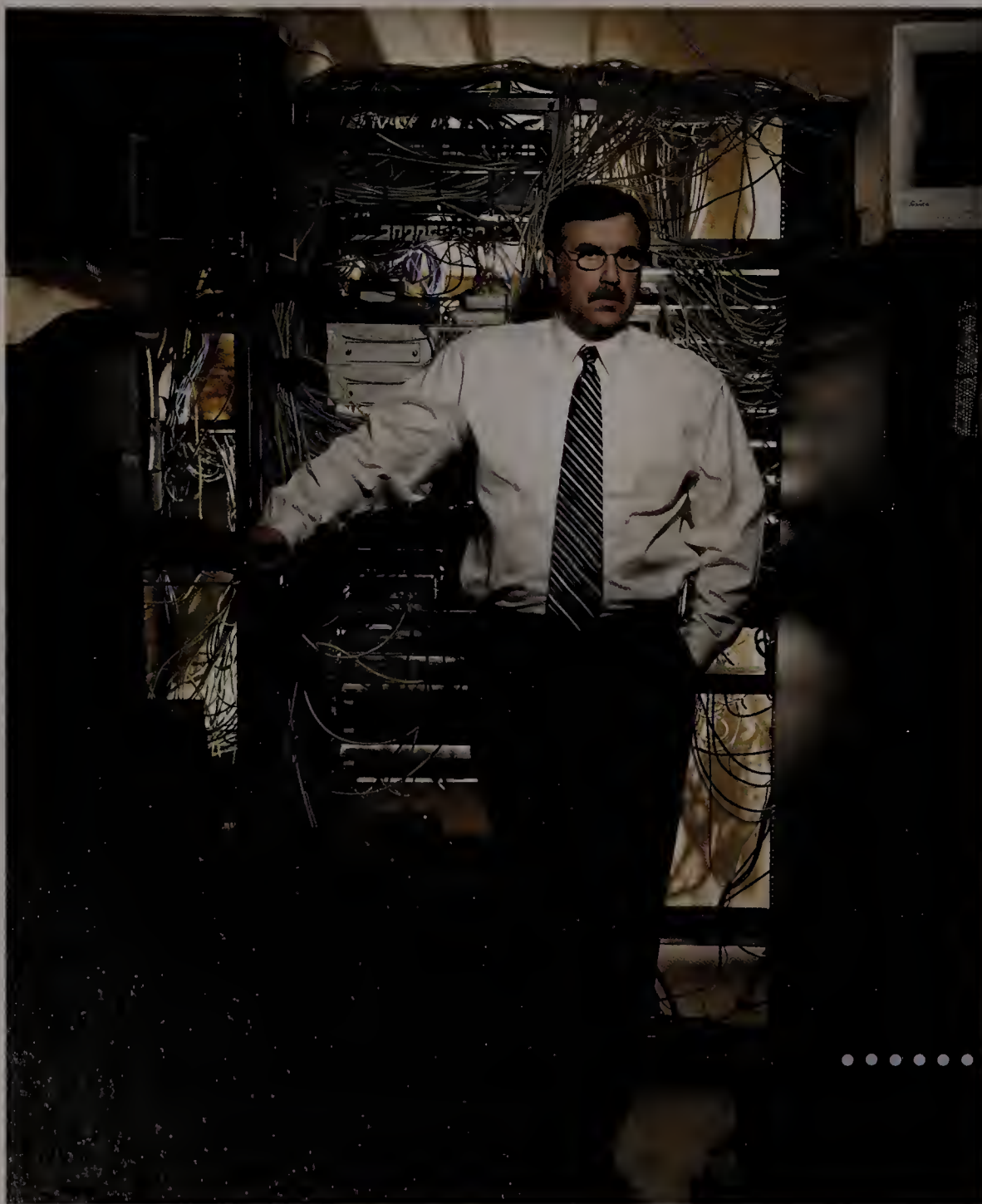
Great Web Hopes

To understand why manufacturers are so enthusiastic about portals, it helps to recall the beginning of e-commerce. And the beginning of e-commerce was

EDI. Back in the 1960s, EDI was a revolutionary technology—the first standard way of exchanging data about orders, shipments and financial transactions. It promised to make manufacturing supply chains more efficient through automation of paper-based processes. And to a large extent it succeeded.

But adoption of EDI through the 1970s and 1980s was limited to big companies that could afford the hundreds of thousands of dollars each year to license the software, operate the linkages, support multiple protocols, connections and data formats, and to pay the VANs. So, although large companies did benefit from EDI, the gains did not extend to their transactions with smaller suppliers, which couldn't afford to implement it. When the Web made its big splash in the late 1990s, CIOs seized on it as the solution to interacting electronically with their smaller trading partners. According to Mark Settle, CIO of Arrow Electronics, they also viewed the Web as the solution that would help them achieve their dream of managing their inventories in real-time (EDI transactions were traditionally conducted in batches). Thus, companies established Web-based portals that these small suppliers could use in lieu of their phones and fax machines to place and confirm orders.

Around the same time that the Web was growing in popularity as an e-business platform, 40 companies in the high-tech industry, including IBM, Motorola and Sony, formed a nonprofit consortium called RosettaNet to develop open standards based on XML for real-time B2B trading. Herman Stiphout, president of RosettaNet, says B2B trading had become so complicated in the high-tech industry that each company in a supply chain had its own way to quote prices, disseminate shipping information and reconcile invoices, including different varieties of EDI. RosettaNet's founders wanted to create standard, automated ways of executing business



Kevin Whitfield, VP of IT for Central Lewmar, says a Web portal makes e-commerce easier to manage.

Small Workgroup Office ●

● Branch Office

● Corporate Office

Road-Warrior Office ●

● Home Office

**Take cost out of your business and increase productivity.
No matter where you do business.**

The Brother Advantage

- *Comprehensive selection*
- *Increased productivity*
- *Lower acquisition costs*
- *Reduced consumable costs*
- *24/7/365 support and service*
- *Free evaluation program*



Mobile Printing Solutions



Labeling Solutions



Desktop Laser Solutions



Color Laser Solutions



Network Printer Solutions



Multi-Function Solutions



Fax Solutions

Brother Printer, Fax and Multi-Function Center® models — designed to increase productivity while decreasing overhead.

Considering that over 94% of Fortune 1000 company employees work outside corporate headquarters*, equipping them with a cost-effective solution is, to say the least, a major challenge.

That's why Brother's Commercial Division is committed to providing superior and reliable imaging solutions that increase productivity while reducing costs. This enables businesses like yours to effectively address critical organizational goals and challenges.

But it is our product reliability, coupled with a responsive nationwide support and service network, that has companies like yours putting Brother at the top of their requisition lists.

Brother's Commercial Division welcomes the opportunity to put our resources to work for you. Contact us today so we can show you how we can positively impact your bottom line while enhancing your performance.

For more information, call 1-866-455-7713.

*Purchase Influence in Larger American Businesses (Erdos & Morgan, 2001).

At your side.™
brother®

© 2006 Brother International Corporation, Bridgewater, NJ • Brother Industries Ltd., Nagoya, Japan
For more information visit our Web site at www.brother.com

processes like product design, inventory management and distributing product information. In practice, observes Arrow's Settle, RosettaNet has become a supplement to EDI for companies in the electronics and automotive industries that can afford to deploy the new technology and that use it for complicated processes that are not yet automated. For everyone else who wants to do Web-based e-commerce, portals are the easiest option.

The Problem with Portals

Yet the cost and complexity associated with supporting multiple B2B e-commerce platforms is precisely why some companies, like the mid-market paper distributor Central Lewmar, are trying to standardize on one platform. "We don't want to have two, three or four e-commerce connections and operations running with different vendors. It complicates our business and adds to the cost of doing business every day," says Kevin Whitfield, vice president of IT for the \$750 million company. Most of Central Lewmar's business is done over the phone or by fax, although two of its customers use EDI. Recently, Central Lewmar chose a portal hosted by Liaison Technologies as its standard. Not only that, but the company is trying to push its portal as the de facto B2B trading platform for the paper industry.

Central Lewmar chose a portal because the XML-based system lets the company check suppliers' inventories in real-time. This helps the company serve its customers, which include marketing, commercial printers and graphic design companies, more quickly when they call to order paper. AMR Research's Swanton says portals are popular because anyone with a browser can access one. And if the majority of buyers' trading partners are using the portal, buyers figure it makes sense to go with what the majority uses and coax the minority using EDI onto the new platform. By getting more (if not all) of their trading partners to use the portal, buyers maximize the investment they've made in building them. Portals are also attractive to buyers because, as is the case with Central

WHICH PLATFORM IS RIGHT FOR YOU?

Your company size and business processes should determine your choice of technology

Newmar, they shift the burden of data entry onto suppliers. Buyers integrate their B2B portals with their back-end systems for inventory management, purchasing and accounting, so their business processes associated with purchasing and invoicing are automated on their end.

The problem with automation using portals is that it tends to be one-sided. Suppliers can't achieve the same level of automation because the Web portals don't easily integrate with their back-end systems. Suppliers could use a third-party integration services provider to connect their systems to their buyers' portals—the approach Central Newmar has offered its suppliers. But that's too expensive for a supplier to do for all of its buyers. Consequently, only one of Central Newmar's trading partners—International Paper, its largest supplier—is using the portal. Whitfield says some suppliers are reluctant to do business through an intermediary, and others lack the technology to support XML transactions. (For more about how adoption of B2B portals is affecting mid-market companies, see "A Strategy for the Mid-Market," Page 70.)

EDI, meanwhile, has shed some of the disadvantages of the past—batch processing of transactions, for example—that have generated criticism. "Ten years ago, when I worked for an oil company, we ran EDI cycles twice a day" because VANs charged per batch of transmissions sent and companies didn't want to send them too often, says Arrow's Settle. Now EDI can be sent over the Internet, providing the real-time advantages of newer transaction methods. While EDI remains a sizeable investment, the Internet makes it less expensive. The VANs have also lowered their prices due

EDI

BEST FOR: Big companies that have the budgets and staff to implement and maintain it, and trading partners with which they have long-term, strategic relationships.

USE FOR: Routine business processes and high-volume transactions such as posting shipment notifications, sending invoices and confirming purchase orders.

Web Portals

BEST FOR: Small and midsize companies that don't have the IT staff or the budget to do EDI, as well as for dealing with trading partners with which your company does business infrequently.

USE FOR: Low-volume transactions.

XML (including Web services and RosettaNet)

BEST FOR: Large, leading-edge companies with healthy R&D budgets for experimenting with this new technology.

USE FOR: Business processes that require real-time transactions, such as collaborative forecasting and looking up item pricing and availability. XML transaction sets such as RosettaNet (which was developed by the electronics industry) are also good for automating new business processes that were never developed in EDI, such as identifying whether electrical components are made with hazardous materials. —M.L.

to the competition they've seen from portals and new standards such as RosettaNet.

Rob Barrett, vice president of solutions engineering for E2Open, which provides software and services that help companies conduct B2B e-commerce, blames the debate over portals and EDI on those vendors who have created products that can't easily be integrated. Because portal vendors' solutions can't process EDI transmissions and vice versa, companies are forced to look to a middleware vendor to integrate those systems, he says. Since



**YOUR JOB IS TO KEEP SYSTEMS AND APPLICATIONS RUNNING.
OUR MISSION IS TO KEEP PEOPLE AND INFORMATION CONNECTED.
LET'S WORK TOGETHER.**

Continuous access to information no matter what. That's Information Availability. It's what your employees, suppliers and customers demand every minute of every day. But to deliver it flawlessly, you need a massive global infrastructure, redundant systems and diverse networks being monitored and supported by skilled technical experts at secure facilities. That's exactly what SunGard provides.

As a result, we can offer you a higher level of availability and save your company, on average, 25%* versus building the infrastructure yourself. Plus, it's a vendor neutral solution that lets you control your data, applications and network while giving you the flexibility to adjust to the changing needs of your business. But best of all, it lets you spend more time solving business problems and less time solving technical problems.

For years, companies around the world have turned to SunGard to restore their systems when something went wrong. So, it's not surprising that they're now turning to us to mitigate risk and make sure they never go down in the first place.

You want your network and systems to always be up and running. We want the same thing. Let's get together. To learn more, contact us at 1-800-468-7483 or go to www.availability.sungard.com/masteria and get your free copy of the book "Mastering Information Availability."

SUNGARD® | Keeping People
Availability Services | and Information
Connected.™

*Potential savings based on IDC White Paper, Ensuring Information Availability: Aligning Customer Needs with an Optimal Investment Strategy.

most companies don't want to undertake such costly integration efforts, they're forced to choose one system, and they tend to choose the portal because more people can access it. Their business partners who've used EDI are suddenly forced to use the portal too. "Shame on the vendors for making what should be a discussion about business processes between trading partners a lengthy religious debate about technology," he says.

Two Ways to Cope

The technology debate won't be resolved anytime soon, which means most companies will have to support a variety of platforms, from legacy investments in electronic data interchange to the latest Web-based system. Although supporting multiple environments is more expensive than standardizing on one system, two companies, Arrow Electronics and Hitachi Global Storage Technologies, have found ways to control the costs.

Arrow supports many B2B data standards, including EDI, RosettaNet and other XML standards, portals and flat files. The \$11 billion company distributes electronics products such as semiconductors from 600 suppliers to more than 130,000 OEMs, and provides some business services, such as inventory management. To cope with each trading partners' technical requirements, Arrow used a development platform from WebMethods to create software that converts files from the variety of formats it receives from customers to formats that Arrow's systems can handle.

A preprocessor program identifies who sent a particular transaction, the type of transaction (whether it's a purchase order, an invoice or an advance shipment notice, for example), the format (Excel file, EDI, RosettaNet or something else), and the data that's contained in the file. A mapping program converts the file from whatever format the customer used into formats Arrow's financial and order-entry systems can

process. Within the mapping program, Arrow developed one generic data map for each type of transaction. For example, a customer's purchase order will be converted to the generic map Arrow created for purchase orders.

The maps make it easy for Arrow to bring new trading partners on board, regardless of what technology they use, says Donna Cozzolino, Arrow's e-commerce director. "We have about 4,000 different types of partners and transactions, yet we only have about 800 mapping programs, because we created these generic maps that developers can reuse." Finally, a post-processor program determines to which of Arrow's systems the file needs to be sent: Purchase orders go to the sales order-entry system, invoices to the financial system. For data conversions that can't be automated, Arrow keeps labor costs down by using offshore developers for the hands-on work.

The technology debate won't be resolved anytime soon, which means most companies will have to support a variety of platforms, from EDI to the latest Web-based system.

Meanwhile, Hitachi Global Storage has found a way to reduce its EDI costs—without forcing trading partners onto new platforms—by outsourcing its EDI operations to an electronic hub operated by E2Open, one of a number of companies such as Sterling Commerce, GSX and Viacore, that operate B2B exchanges and facilitate B2B integration.

The company had used electronic data interchange since 1996 and spent "a good fraction of a million dollars" annually to maintain its EDI infrastructure, says CIO Jayaraman. But Jayaraman figured he

couldn't dump EDI wholesale because so many suppliers use it.

The company had already deployed software from E2Open to facilitate collaboration between its factories in the Philippines and Japan and those factories' suppliers. So Jayaraman decided to use the pipe it had already established for that purpose to send EDI documents through the hub. In this way, Hitachi Global Storage has been able to decommission its entire EDI infrastructure without undoing any existing automation used by its trading partners. E2Open maintains an EDI infrastructure for its customers and updates it as needed. For example, if one of Hitachi Global Storage's business partners establishes a new location, or if a business partner wants to add another transaction, E2Open will add the new IP address or transaction to the existing EDI maps and protocols. Jayaraman says the move to E2Open paid for itself in nine months.

For suppliers such as Panasonic's Jeanos, who also uses E2Open when dealing with some customers, such a solution isn't ideal, but it's better than using proprietary portals and manually keying in thousands of lines of purchase order data. He has been pushing buyers who want him to dump EDI to consider the drawbacks of such a move. In the process, he says, he has been able to forestall indefinitely having to use two of his customers' portals. "They have agreed to let Pana-

sonic be the last supplier to roll onto their [portal]," he says. In other cases, he has convinced buyers to push files to him electronically, or to allow E2Open to pull data from buyers' portals and transmit it electronically to Panasonic. Although E2Open presents an additional cost for Panasonic, Jeanos says, "I'd rather have E2Open push files to me electronically than have someone fatfinger in information." **CIO**

E-mail your feedback on this story to Senior Writer Meridith Levinson. She can be reached at mlevinson@cio.com.

GOES

OPERATIONAL

Arming Their Frontlines, Enterprises Derive
Hard Business Value From Operational
Business Intelligence

EXECUTIVE SUMMARY

BUSINESS INTELLIGENCE is a mature technology that's been helping executives to make sound decisions in the boardroom. But business trends are driving new usage that arms frontline employees—from the field to the production line—with instant access to analytical data to better do their jobs. Read this article to find out how operational business intelligence can enable your employees to access, analyze, manage, and distribute useful, real-time business intelligence to today's extended enterprise.

When one thinks of "business intelligence," it typically conjures visions of massive amounts of raw data, sophisticated analytical calculations, and executive dashboards—certainly nothing that the average Joe or Josephine could get their hands on.

Sure, operational folks on the frontline can get the information, perhaps by submitting a formal request to IT. But all too often, the results are partial views of somewhat relevant data in unfamiliar formats that arrive too late.

But business trends have spurred change. Now, operational employees—whether in the field or on the production floor—can get the intelligence they need, when they need it. What's more, it can be as simple and powerful as "Googling" the corporate data infrastructure.

The Power's in the Casual User

"The message from end users is loud and clear," says Keith Gile, an analyst at Forrester Research. "They want business intelligence to help them do their jobs, not just report on data."

That's what makes his definition of business intelligence (BI)—the process of making information actionable—so telling. BI helps users make decisions, analyze variables, predict trends, synthesize results, and deliver information. That is, do their job better. So the question becomes: who are the users?

In a recent report, *The Forrester Wave: BI Reporting and*

Analysis Platforms, Q1 2006, Gile identifies two distinct BI classifications: analytical reporting, which is "functionality-rich OLAP/query mechanisms targeted at power-user producers," and enterprise reporting, which is "format-rich report-authoring mechanisms for a large community of casual users."

These two categories tell a tale of BI, past and future.

In the past, BI was reserved for the chosen few: business line managers using sophisticated analytical tools to measure tactical performance, and senior executives using dashboards to build and refine strategy.

Going forward, however, BI is evolving to accommodate the needs of the casual users to which Gile refers. "Casual users" are operational employees, and even partners and customers.

"Operational business intelligence arms the frontline with the information they need to do what they do better," says Kevin Quinn, vice president of product marketing at Information Builders, a provider of business intelligence and real-time Web reporting. This new wave of intelligence serves up real-time data to impact the here and now.



Custom Publishing

Advertising Supplement

**Information
Builders**The Standard for
Enterprise
Business
Intelligence

Operations: Where the Real Value's At

Quinn says operational business intelligence (OBI) offers real business value, resulting in enterprise-wide operational efficiency and cost savings through several key benefits:

- **Shortens the time to discovery**
- **Leverages information assets**
- **Distributes intelligence more widely**
- **Improves performance**
- **Monitors business activity**

Perhaps more intriguing, OBI helps enterprises save money immediately. "If you look for operational applications or processes that can be enhanced by BI [as opposed to dashboard applications], you'll have an easier time with your ROI," says Quinn. OBI offers hard savings that are easily quantified. For example, a correction on the assembly line can yield increased output, and special promotion can right a down-tick in sales. Both would have direct and immediate impact on the bottom line.

Arming the Frontline

"A key requirement for business intelligence technology going forward will be to efficiently bridge centralized information management with distributed information analysis and use," says Quinn. As such, there are several important considerations.

One of today's primary challenges is the sheer volume of enterprise data. Consider the obvious data sources: data warehouses, marts and stores, applications, transactions, Web services, documents, and e-mail. Enterprises must also contend with heterogeneous environments with different applications, operational systems, databases, and vendors—a mix that is forever changing. An integrated data infrastructure provides a complete view of intelligence for better decision making.

Once the data infrastructure is under wraps, OBI accelerates decision making. Traditionally, executives have reacted to month-end reporting. They ask, "Why did this happen? What could we have done to prevent this?"

OBI, by contrast, enables enterprises to look for patterns and make corrections before major problems arise. "By finding faster and more effective ways to turn data into relevant, actionable information, organizations can shorten business cycles, increase responsiveness, and gain a competitive edge," says Quinn.

Providing intelligence where people need it is also important: on the production floor, where manufacturing folks need it. Or with mobile access, so field reps can use it on the road.

Operational BI gets really interesting when enterprises start embedding intelligence and decision-making capabil-

ity directly into business processes. "The system doesn't have to interact with humans," says Quinn. "It makes decisions for you"—for example, production lines automatically adjusting for bottlenecks and CRM applications automatically stopping out-dials based on connect failure predictions.

OBI Done Right

Quinn provides advice on selecting the right OBI platform, recommending that CIOs look for three primary attributes:

INTEGRATION. A complete intelligence picture is critical. Look for a solution that provides a unified metadata layer with native access to a variety of databases and information sources, including relational, legacy, ERP, and CRM, as well as data staged in warehouses or data marts and real-time data from operational systems.

SCALABILITY. Enterprises need to make their data available to an unlimited number of people, inside and outside the enterprise. Also, look for Web deployment options to ease implementations with a "zero-footprint" client.

INFORMATION DELIVERY. BI solutions must distribute information easily to everyone who needs it, when and how they need it. CIOs must demand an information delivery solution that meets these challenges through intelligent delivery and storage of information. That means "just-in-time" information delivery with choices such as alert-based reporting, periodic summaries, and pager notification.

Go Operational

Bringing BI to an operational level can empower enterprises with the real-time intelligence they need to maintain an advantage in these competitive times. For more information, stay tuned for future installments of this OBI supplement series as we explore the challenges of integration and the benefits of a service-oriented architecture (SOA). Now is definitely the time to go operational. •

About Information Builders



Information Builders is the leader in enterprise business intelligence and real-time

Web reporting. The company's WebFOCUS product—the industry's most secure and flexible—is able to meet all the reporting needs of the extended enterprise, ranging from analysts to power users to the widest deployments for hundreds of thousands of users. Additionally, WebFOCUS' empowerment of organizations seeking to leverage all their data by accessing it all—from legacy to data warehouse—is unmatched.

For more information, visit www.informationbuilders.com or call 1-800-969-INFO.

CIO's e-Mail Newsletters

The Updated Management & Enterprise Information You Want

Delivered right to your desktop

It's the best way to keep one step ahead of the competition.

- ☒ **CIO Enterprise**
CRM, ERP, SCM, KM, Security and other key enterprise initiatives explained.
- ☒ **CIO Insider**
Your guide to the latest from CIO.com.
- ☒ **CIO Leader**
Updates, insights and advice from CIO.com on hiring, firing and inspiring.
- ☒ **CIO Research Update**
Highlights of CIO's most recent IT research.
- ☒ **CIO Store News**
Updates on new offerings at the CIO Store.
- ☒ **CIO Magazine Tech Poll**
Results of our monthly surveys, covering IT's overall health as well as spending and trends.

Sign up now for CIO's COMPLIMENTARY e-mail newsletters
[**www.cio.com/newsletters**](http://www.cio.com/newsletters)



Business Technology Leadership

A Benchmark for the Strategic CIO

"If I were talking to a CEO or president, I'd tell him it's insane to make any strategic decisions without the CIO at the table," says Gerry McCartney, assistant dean of the Krannert School of Management at Purdue University.

CEOs seem to agree. Over the past year or so, CEOs have been telling their IT chiefs that they need them on their team. They need them to drive the business and to be strategists.

This growing mandate for the CIO—supported by findings in the latest "State of the CIO" survey (see [www2.cio.com/research](http://www.cio.com/research))—is causing sleepless

the strategic aspects of the role. The result, fine-tuned by several CEOs, is a scoring system attached to 20 key indicators that fall into four groups:

1. Strategic IT leadership
2. Strategic business leadership
3. IT-business strategic alignment
4. Application of the CIO's unique knowledge and perspective

The CIO's knowledge and perspective are perhaps the most critical and least appreciated parts of his role. "The unique advantage of the CIO is his view into and understanding of the business," says David Gutierrez, CIO of ING Americas. "CIOs understand the internal and external customers and how departments work with each other." Therefore, he says, CIOs are well-positioned to generate and develop new ideas about the business.

For example, he says, when an annuity is about to mature at ING, it means that a lump sum of money is being released—money that could end up out of ING's purview if oversight is limited to an individual business silo. Enterprisewide integration, however, ensures the appropriate department would be aware of an annuity's maturity and would be able to offer a serv-

ice to retain that money. "This requires a shift away from a product-centric view to a customer-centric view that crosses traditional lines of business," says Gutierrez, a perspective that is natural to the CIO position.

The big-picture view not only identifies and drives cross-enterprise strategic synergies, it focuses on what's best for the organization as a whole. "The CIO should be concerned only about value to the whole organization, bringing an impartial, informed voice to the table when making strategic decisions," says McCartney.

And of course, CIOs alone can contribute a deep understanding of technology. "My unique value proposition for Stanford is my broad IT background," says Carolyn Byerly, CIO of Stanford Hospital and Clinics. "I'm at the table with the CEO as one of five direct reports. We spend two hours each week talking about business strategy, and we each bring our unique expertise to that. Mine is how to use information to achieve our vision."

We invite all IT leaders to use the self-assessment tool. Ask your colleagues, boss and staff to fill out the peer-review version. We'll aggregate the data (anonymously, of course) to compare and contrast perspectives. This data will help enlighten those in IT and the rest of the business as to what it means to be a strategic CIO. **CIO**

Richard Pastore (rpastore@cio.com), managing director of content development for the Council, and Michael Swenson (mswenson@cio.com), director of research for the Council.

» Assess Yourself Online

ING Americas CIO **DAVID GUTIERREZ** says the CIO has a unique understanding of the business. To get a firm grasp on the strategic aspects of the role, view the Council's benchmark tool at www.cioexecutivecouncil.com/public/content.html.

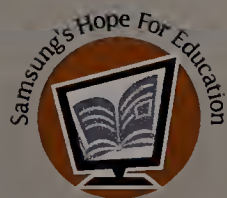
CIO.COM

David Gutierrez

nights for CIOs who lack direct business experience. What does it mean to be strategic? How does a CIO know if he's doing the right things well?

To help both CIOs and CEOs get a firm grip on the strategic elements of the role, in early January, nearly 20 members of the CIO Executive Council set out to develop a benchmark that would define and measure the performance of

The CIO Executive Council is a professional organization for CIOs founded by CIO's publisher. To learn more about the Council, visit www.cioexecutivecouncil.com or contact Vice President of Development Dexter Siglin at dsiglin@cio.com or 508 935-4493.



Join Tony Danza, Samsung and Microsoft® in giving students a fighting chance.

Write an essay and you could win the school of your choice over \$1 million in Samsung technology and Microsoft software. Samsung believes that the finest education begins with the finest educational tools. Which is why our Hope for Education program, with help from Microsoft and Tony Danza, has donated over \$3 million in technology and software to the nation's neediest schools through an annual online essay contest. Please visit www.hopeforeducation.com to find out more about Samsung's Hope for Education. Because a little hope can make a big difference.



Microsoft





August 20-22, 2006

Hotel Del Coronado
Coronado, California

CIO100

SYMPOSIUM & AWARDS CEREMONY

The 8th Annual

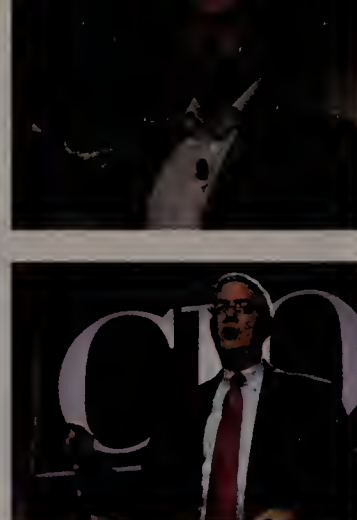
CIO 100 Symposium & Awards

Delivering Innovation to the Enterprise

CIO 100 Symposium is the premier place for CIOs to exchange ideas with their peers across all industry segments as noted thought maven and recognized leaders in the CIO community explore how to develop, implement and capitalize on innovation most effectively.

To register or for more information

visit www.cio.com/conferences or call 800.355.0246.



SESSION HIGHLIGHTS

Where's the Next Wave of IT Innovation Coming From?

If innovation is the key to the future, where are our next innovators going to come from and how will that affect businesses here and around the world?

Tapping Internal Creativity

Approaches to innovation can be as varied as the initiatives it produces. Foster creative thinking and your employees will provide original ideas and pioneer new products. Hear from CIO 100 winners who discovered and developed their internal innovation sources.

SOA—Are You Ready?

Service-oriented architecture (SOA) allows IT to respond quickly to new business needs to deliver applications in real time, or on demand. Discuss the latest developments and implementation strategies with this leader in the field.

Why Not “Not Invented Here”?

Innovation labs, design firms and consultants are playing an increasingly large role in the pursuit of innovative ideas. For many companies the once firmly held belief that innovation had to be homegrown is falling by the wayside. Learn how this company is maximizing their outsourcing partnerships, realizing a new way of doing business and generating innovation from outside the company.

Oh, And One More Thing.....

What is it? What is the one thing more you need to know, learn and take away from this experience? Here from an innovation guru on just what that one more thing might be.

WHO SHOULD ATTEND

Leaders in the CIO community, who want to explore how to develop, implement and capitalize on innovation.

In other words, you.

CIO 100 Symposium Awards are proudly underwritten by



Official Host Sponsors



WIRELESS DEVICES

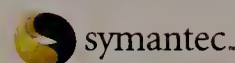


VISUALIZE INNOVATE DELIVER™

APPLICATION DEFINITION SOFTWARE



OPEN SOURCE



SECURITY

Sponsored by



What Business Demands.

Presented by



Business
Technology
Leadership

14th annual
CIO 100 Awards Ceremony

INNOVATION TAKES CENTER STAGE

Celebrate 100 winners with 100 innovative technology solutions that revolutionized 100 world class organizations.

Register Now.
www.cio.com/conferences

CIO 100 Symposium & Awards **Welcome to the Conversation.**



SALES AND SERVICES

CIO SALES OFFICES

President and CEO
Michael Friedenberg
508 935-4310

Publisher
Gary J. Beach
508 935-4202

EAST COAST

VP Sales, East
Bob Bragdon
508 935-4443

Regional Sales Manager
Ellie St. Louis
201 634-2332

NEW ENGLAND

Senior District Sales Manager
Andrew Haney
508 935-4586

Sales Operations Manager
Dawn Cora
508 935-4092
Fax • 508 879-6063

NORTH CENTRAL

Regional Sales Manager, Southwest
Beth DeVillez
847 759-2727

Advertising Sales Associate
Kim Giovanni
847 759-2728
Fax • 847 759-2729

WEST COAST

VP Sales, West
Bob Melk • 415 975-2685
Senior Regional Sales Manager
Ai Collins • 415 975-2686
Regional Sales Manager
Kevin Ebmeyer • 415 975-2684

Account Executive
Derek Jung • 415 975-2683
Fax • 415 543-2358
Senior Account Executive
Sara Mascall • 415 978-3385
Ad Sales Associate
Devon Slattery • 415 975-2687

SOUTHERN CALIFORNIA

Regional Sales Manager
Kevin Ebmeyer • 415 975-2684

ONLINE SERVICES

VP, Integrated Media and Online Sales
Jim Alla • 508 988-6763
Western Online Sales Manager
Jennell Hicks • 415 243-8585

Online Account Executive
Danielle Tetreault
508 988-7969

Online Client Services Specialist
Valerie Sumner • 508 988-7877
Online Sales Administrator
Anne Butera • 508 988-6823

CUSTOM PUBLISHING

VP of Program Development, IDG
Charles Lee • 212 867-1229
VP, Integrated Media and Online Sales
Jim Alla • 508 988-6763
Director of Sales
Mary Gregory • 508 988-6765
Executive Editor and Director of Operations Tom Field
Director, Integrated Project Management Mo Barrett
Managing Editor Jim Malone
Senior Project Manager
Amy Greenleaf
Project Managers
John Danielowich,
Jon Heinrich

LIST SERVICES

Contact Paul Capone of IDG
List Services at 508 370-0865
or pcapone@idglist.com.

REPRINT SERVICES

For article reprints (100 quantity or more), please contact Jennifer Eclipse at
PARS International at 212 221-9595 x237 or via e-mail at
jeclipse@parsintl.com.

CIO is published in the U.S. as well as in:

Australia, CIO Australia
www.idg.com.au
Canada, CIO Canada
cio.itworldcanada.com
China, CEO & CIO China
www.ceocio.com.cn
France, CIO France
www.idg.fr/cio
Germany, CIO Germany
www.cio.de
India, CIO India
91-80-521-0309/12
Japan, CIO Japan
www.idg.co.jp
The Netherlands,
CIO Netherlands www.cio.nl
New Zealand, CIO New Zealand
www.idg.co.nz
Norway,
CIO Business Standard
www.business-standard.no
Poland,
CXO Poland www.cxo.pl
Singapore, CIO ACEN/
Hong-Kong www.idg.com.sg
South Korea, CIO Korea
www.cio.seoul.kr
Sweden, CIO Sweden
www.cio.idg.se

For further sales information:
www2.cio.com/marketing/aboutcio/contacts.cfm

CIO CONTACT INFORMATION

Editorial, Advertising and

Business Offices: CXO Media Inc.,
492 Old Connecticut Path, P.O.
Box 9208, Framingham, MA
01701-9208, 508 872-0080.

CIO (ISSN 0894-9301) is
published semimonthly and as
a combined issue Dec. 15/Jan. 1
by CXO Media Inc. Periodicals
postage paid at Framingham, MA,
and at additional mailing offices.
Canada Publications Mail Agree-
ment Number 1902075. CANA-
DIAN POSTMASTER: Please
return undeliverable copy to P.O.
Box 1632, Windsor, ON N9A 7C9.

Permissions: Copyright 2006
by CXO Media Inc. All rights
reserved. Reproduction of
material appearing in *CIO* is
forbidden without written
permission. Send all requests
to Yadira Pizarro, PARS Interna-
tional, 212 221-9595, Ext. 231,
or yadira@parsintl.com.

Photocopy Rights: Permission
to photocopy for internal or
personal use or the internal or
personal use of specific clients is
granted by *CIO* for users through
the Copyright Clearance Center,
provided that the base fee of \$3
per copy of the article, plus \$.50
per page is paid directly to Copy-
right Clearance Center, 27 Con-
gress Street, Salem, MA 01970.
Please specify: ISSN 0894-9301.
Permission to photocopy does
not extend to contributed articles
followed by this symbol: ‡.

Subscriptions: *CIO* is free to qual-
ified information executives. To
apply, use our online subscription
form at www.subscribe.cio.com.
Subscriptions are also available
on a paid basis at a rate of \$95 for
the United States and Canada,
\$195 International (payable in
U.S. funds only) and may be
ordered online at www.subscribe.cio.com/services.html. Or
address inquiries to *CIO*, P.O. Box
489, Northbrook, IL 60065-0489;
866 354-1125. Please allow four
to six weeks for a new subscrip-
tion to begin. The single copy
price is \$9 for the United States
and Canada, and \$15 Interna-
tional. Prepayment is required,
payable in U.S. funds.

Change of Address: Please go to
www.ameda.com/custsrv/cio
and follow the online instructions.

Postmaster: Send change of
address to *CIO*, P.O. Box 489,
Northbrook, IL 60065-9816.
Printed in the U.S.A.

INDEX OF COMPANIES AND ADVERTISERS

Page numbers refer to the first page of the article(s) in which the company has a substantial mention.
This index is provided as a service to readers. The publisher does not assume any liability for errors or omissions.

COMPANY INDEX

Advanced Micro Devices Inc.50
Adventis Corp.13
Affordable Internet Services Online Inc. .50
American Power Conversion Corp.50
Arrow Electronics Inc.68
BearingPoint Inc.40
Bluecoat Systems40
Central Lewmar68
Dell Inc.50
Delta Air Lines Inc.13
Dow Chemical Co., The6
E2Open Inc.68
Egenera Inc.50
ESPN60
Gartner Inc.13
Gasco Energy Inc.68
Google Inc.40
H&R Block40
Hewlett-Packard Co.50
Hitachi Global Storage Technologies68
IBM Corp.13
ING Group78
Inovis Inc.68
In-Stat13
Intel Corp.50
International Paper Co.68
JetBlue Airways13
JupiterResearch13
Liaison Technologies LLC68
Matsushita Electric Industrial Co.68
Microsoft Corp.40

Motorola Inc.13
New York Life Insurance Co.6
NewEnergy Associates50
Northrop Grumman Corp.13
Nubridges LLC68
Nucleus Research Inc.13
Open Source Storage Inc.50
Oracle Corp.68
Ponemon Institute13
Rackspace Ltd.50
Rider Research60
SAP13
Seeburger AG68
Silicon Graphics Inc.50
Sony Corp.68
Sony Pictures Digital Inc.25
Spencer Stuart13
Sterling Commerce68
Sun Microsystems Inc.50
Supplyworks Inc.68
Trans Union LLC25
United Air Lines Inc.13
Uptime Institute Inc., The50
Weather Channel Inc., The40
Webmethods Inc.68
Yankee Group, The60
ZapThink LLC25

ADVERTISER INDEX

Aruba Networks55
AT&TC2
Audio Visual Innovations45

Brother International73
CA35
Cingular WirelessC3
Compuware Corp.65
CXO Media Inc.24, 77, 80, 83
EMC² Corp.67
ESRI11
Hewlett-Packard Co.24a
Informatica Corp.59
Information Builders76a
Intel Corp.31
InterSystems Corp.57
Iowa Department of Economic
Development29
Manpower Inc.9
MAS Holdings21
Microsoft Corp.15, 22, 52a
MRO Software Inc.39
Oracle Corp.49
Pillar Data Systems Inc.47
RightNow Technologies Inc.17
Samsung7, 79
SAP27
SAS12
Siemens Corp.19
Sun Microsystems Inc.36
SunGard Availability Services75
Sybase5
Symantec Corp.C4
VeriSign Inc.71
Verizon33
Xerox Corp.2

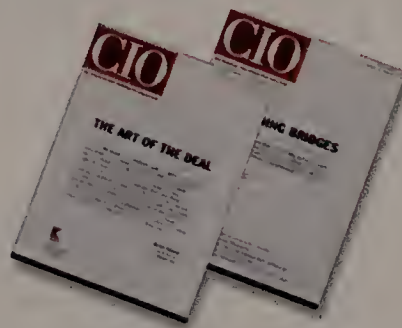
It's OK to show off to your friends that you were in CIO.



But it's even better to show your **customers.**

What better way to inform your key customers of your editorial coverage in *CIO* than through customized Editorial Reprints?

Leverage the positive impact of your editorial coverage by using reprints for direct mail campaigns, seminar promotions, employee communications, recruiting and marketing programs. Let us enhance your reprints with your company's logo, address, and sales message. Reprints make great SALES tools for trade shows, mailings or media kits.



And while a framed copy of your article will look neat on your wall, it will look even better in the hands of your customers.



Business Technology Leadership



For more information on customized editorial reprints in volume quantities, contact Jennifer Eclipse at 212.221.9595 x237 or email jeclipse@parsintl.com.
Website: www.magreprints.com/quickquote.asp

endlines

BY THOMAS WAILGUM

WHAT YOUR REMOTE WORKERS ARE REALLY DOING



Out of Sight, Out of Control

You're away from the office and on a conference call with three of your staffers who are back in the IS shop. You hear some music in the background and then a glass breaks.

What they say happened: A glass of water fell off their workspace, amidst all of the hard work and Ethernet cables.

What you think happened: The techies are partying like it's 1999, and Stu just dropped his margarita.

What you should do: Call the CSO, a.k.a. Darth Vader, and ask him to go down and investigate.

You're talking up a new handheld CRM application with the VP of sales who

is working out of a remote office, and she seems a bit distracted.

What she says: Her assistant keeps interrupting her with phone messages.

What you think she was doing: BlackBerry-ing her sales colleagues about the boring conversation she's having with some IS guy.

What you should do: "Accidentally" shut down her BlackBerry service and see if that gets her attention.

You send an urgent IM to your project manager who is "working at home." No response for two hours.

What he says: "I was putting out a fire with a key business partner and couldn't respond."

What you think happened: His taxes are overdue, his iPod needed updating, and Jerry Springer had Nazi lesbians on the show.

What you should do: Tell him you had video cameras installed on all of the laptops and you *know* what's going on.

You're using WebEx to go over a critical presentation on a new software rollout, and no one in the other offices is asking any questions.

What they say they're doing: Engrossed in your every word and taking copious notes.

What you think they are doing: Using the live chat feature to message each other on what a "dead in the water" project this is.

What you should do: Tell them that 100 percent of their bonuses are tied to this project's success.

You're on a conference call with the board of directors, talking up a new ERP rollout, when they have to put you on mute.

What they say they are doing: Confidentially discussing a key financial question.

What you think happened: The group is still trying to figure out what "ERP" stands for.

What you should do: Explain to them what ERP is—for the 50th time!

Your CEO is calling the help desk in a panic.

What he says: "Someone stole my laptop!"

What you think happened: He got up to go to the bathroom in Starbucks and left his laptop on the table. See ya!

What you should do: Tell him you've terminated his network connection—even though you had never given him network access in the first place—and that he'll have a new laptop on his desk Monday morning. Sir.



INTRODUCING BUILT IN BroadbandConnect

the only built in wireless connection
that works in more places than you do.

Get a Dell™ Latitude notebook equipped with Cingular's supercharged wireless network.

- Available on the Dell Latitude D620 and D820. Nothing to install. Just activate and go.
- Runs on Cingular's BroadbandConnect and EDGE, the largest national high-speed wireless data network.
- Broadband speeds on the 3G global standard everywhere BroadbandConnect is available.
- Access your business-critical information in 13,000 cities and towns and in 100 countries around the world.
- More secure than Wi-Fi with a wider coverage area – no hotspots required.



DELL™

CINGULAR MAKES BUSINESS RUN BETTER

Click www.cingular.com/dell

 cingular
raising the bar 

Coverage not available in all areas. Cingular covers 273 million people. Wireless service not included with notebook. Other conditions and restrictions apply.
The Dell logo is a trademark of Dell Computer Corporation. ©2006 Cingular Wireless. All rights reserved.

**NO VIRUSES.
NO SPAM.
NO DOWNTIME.
EMAIL DONE RIGHT.**

No one can promise complete email security and availability. We don't live in that kind of world. Yet one company has earned a worldwide reputation for making email as secure and available as it is important. A company that not only screens out viruses, spam and spyware, but also provides solutions for speedy recovery in case of system failure. A company that reduces storage costs by archiving to secondary storage and blocking unwanted emails. A company that provides management tools for efficient email retention and fast email discovery. A company that does email right. Symantec. Because we know it's not just email, it's your business. For more information visit www.symantec.com/esa or call 800-745-6054 **BE FEARLESS.**

www.symantec.com/vision

SymantecVision 2006

May 8-11, 2006 | Moscone West | San Francisco, California, U.S.A.



Symantec Corporation. All rights reserved. Symantec, the Symantec logo, and Vision are trademarks or registered trademarks of Symantec Corporation in the U.S. and other countries.